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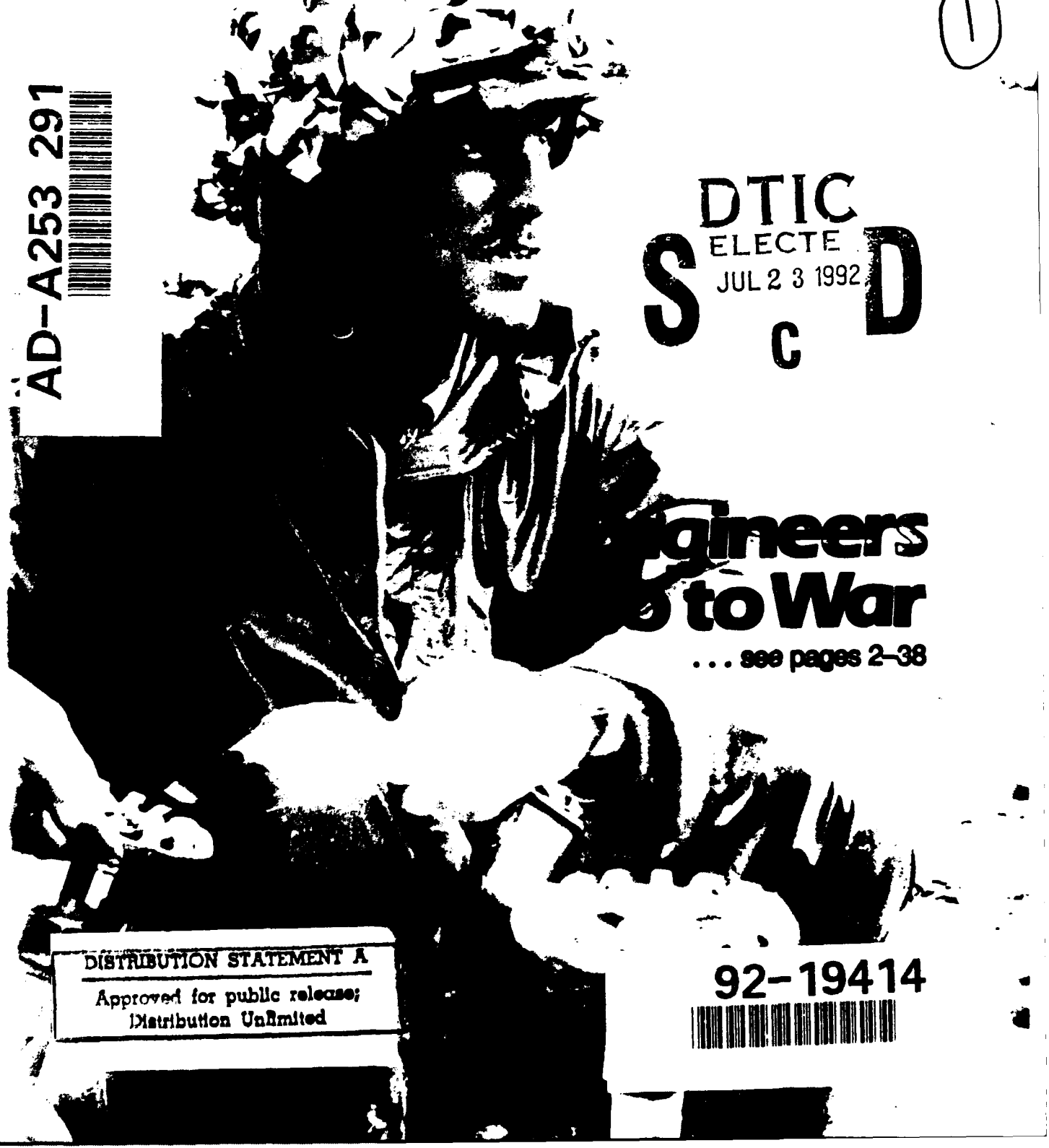

gineers to War

... see pages 2–38

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Your Professional Journal—The Army's Conscience

This is the 45th and last issue of *Military Review* (MR) in which my name appears in the managing editor's slot in the masthead. In the big scheme of things, that fact fits neatly between unimportant and "so what?" Perhaps the only noteworthy aspect of my long stay as the "S3" of MR is that I have had a front–row seat as the Army's journal reported and led the debate on the most significant events affecting our military since World War II. A review of the content in MR over the last four years would be eye–opening to all who do not appreciate its role in reporting current operations and shaping the Army's future.

It has been said that MR was the journal of record during the heated debate that carried the Army from its post–Vietnam doldrums through development of the active defense doctrine and ultimately to its Gulf War–winning AirLand Battle and joint doctrine. Between 1976 and 1986, MR published more than 100 articles arguing the many contentious issues that eventually shaped AirLand Battle doctrine.

Recently, it has been much more difficult to focus on any single aspect of the professional debate. Doctrine development, modernization, leadership development, and so forth have frequently been overshadowed by the realities of dramatic world events and the selection of military options by our leaders.

MR has attempted to keep pace with "theme" and special issues. Sometimes we were spectacularly successful, hitting the moving target broadside with our focus on low–intensity conflict, the changing Soviet threat, Panama and most recently with our Gulf War issue. Other times, we chased an illusive end, seeking the "right stuff" for recurring themes on command, leadership, training, doctrine, operational art and technology. Always, we are dependent on those who write and submit the articles.

For the most part, the right stuff has come in—sometimes from authors with high rank and great credentials—but more often from the majors, lieutenant colonels and colonels who are most current in their experience and perspective. It has been their candid input that provides the essential insights into our profession and keeps the debate relevant, objective and focused.

As the Army attempts to chart a course through the stormy waters of the post–Cold War/post–Gulf War reorganization, our professional journals should again rise in importance, and rightly so. Where else can soldiers, civilian employees and others with a stake in the profession voice their views freely? Where else can new ideas be offered and debated with the whole profession as witness? Where else can those responsible for officer education and leader development look to find the informed debate and lessons needed to augment classroom instruction?

Of course I am biased, but for the past four years and almost continuously for the past 70 years, it has been *Military Review* and *Parameters*, *Armor* and *Infantry*, and the other branch and service journals that have been the collective conscience of our profession. Army leadership has acknowledged this for decades with continuous budget and staffing support along with a "hands–off" policy with regard to editorial philosophy.

Now, as the budget noose gets tighter and the downsizing becomes reality, one longstanding lesson remains clear. The new, smaller Army will again rely heavily on the education and professional development of its leaders to prepare for the inevitable "next" call to arms. The Army should look not only to preserve its journals but to ensure they perform the same essential service they did in preparing the officer corps for its warfighting chores in World War II. The Army should once again use its journals to carry the doctrinal debate as AirLand Battle is transformed into AirLand Operations.

Finally, the Army should call on its leaders at all levels to use MR and its fellow journals to voice opinion, to offer fresh ideas and to challenge the status quo. Next month's and next year's pages are still empty; as always, they remain yours to fill.

Chris J. LeBlanc
Managing Editor, May 1988—March 1992

CORPS OF ENGINEERS
Laying the Groundwork for Theater Operations

Lieutenant General Henry J. Hatch, US Army,
and Janet A. McDonnell

Operations* Desert Shield *and* Desert Storm *placed the US military in a theater of operations where the US Corps of Engineers had years of experience. The authors review the history of the corps in Saudi Arabia prior to the 2 August invasion of Kuwait. They describe the steps taken to provide engineer support before engineer units arrived in Saudi Arabia. Finally, the authors discuss a few of the numerous tasks that were accomplished to provide support to soldiers and equipment during the operation.

When the Iraqi invasion occurred, the Saudis' experience with the Corps of Engineers helped convince government officials that they could ask the United States to come into their country and that the United States would respect their customs, do professional work and leave when the work was completed.

THE US Army Corps of Engineers (USACE) has maintained a presence in the Kingdom of Saudi Arabia for nearly 40 years and was responsible for constructing certain facilities and infrastructure that were vital in the successful deployment and support of US forces during operations *Desert Shield* and *Desert Storm*. The longstanding relationship between the corps and the Saudis allowed the corps to contract quickly for services and construction and lease facilities to accommodate US forces.

USACE involvement in Saudi Arabia began in 1951 with the rebuilding of the airfield at Dhahran, using US Air Force funds. The Dhahran Air Base, initially completed in 1956, became an important stopover point for US Air Force and Navy aircraft. The corps completed the construction of the Dhahran Civil Air Terminal at Dhahran Airfield in 1961.

In May 1965, the US ambassador to Saudi Arabia and the Saudi minister of Foreign Affairs signed the Engineer Assistance Agreement in which the United States agreed to provide advice and assistance for construction of certain military facilities for the Saudi Ministry of Defense and Aviation (MODA). Under this agreement, the corps constructed three military cantonments:

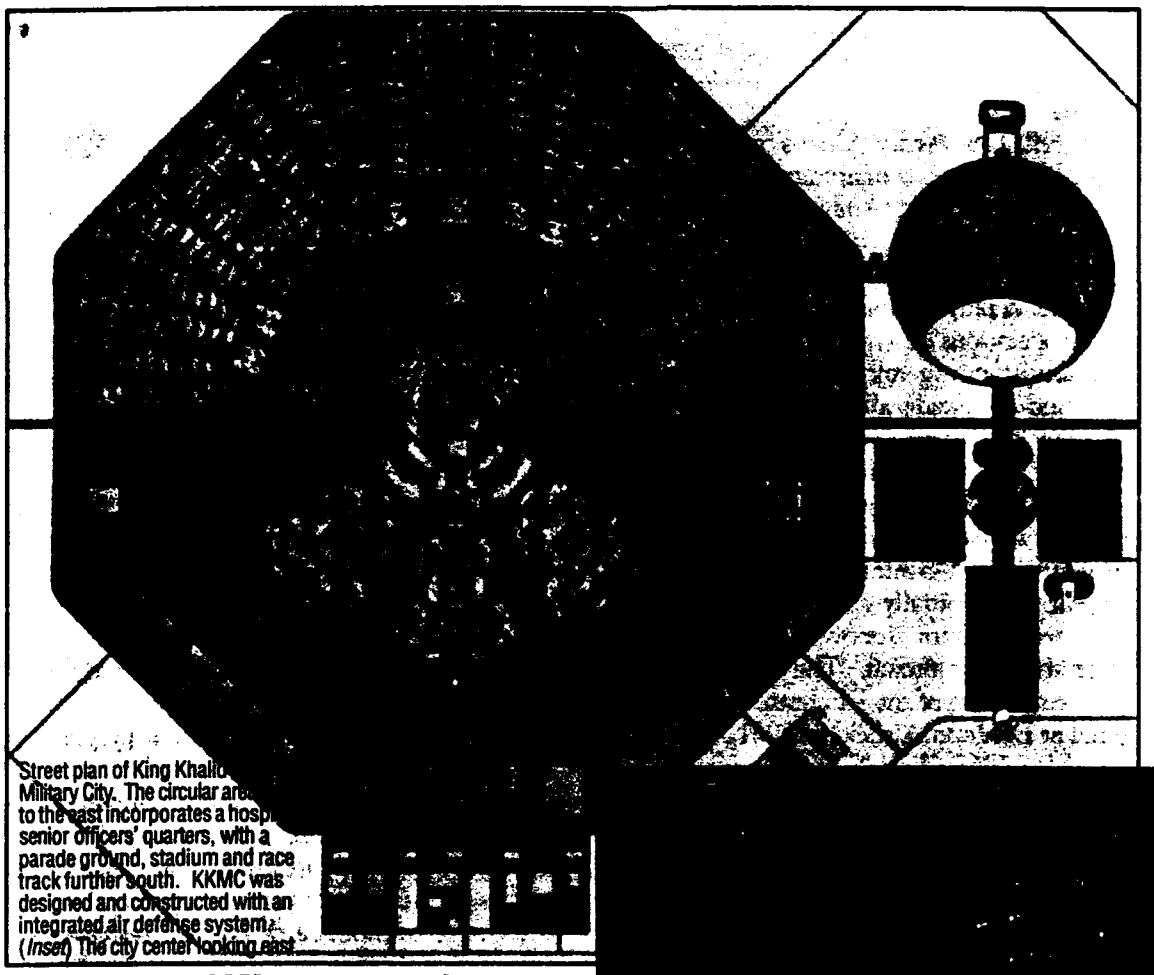
- King Faisal Military Cantonment near the Yemen border.
- King Abdul Aziz Military Cantonment south of the Jordan border.
- King Khalid Military City (KKMC).

The KKMC project, finished in 1988, was a complete city and base with facilities to support a projected population of over 50,000, an airfield, hospital and engineer center and school. Other work under the agreement included a headquarters complex for the Royal Saudi Air Force, an airborne and physical training school, King Abdul Aziz Military Academy, the port at Ras al Mishab and a headquarters complex and officers club for MODA.

Under the Saudi naval expansion program, beginning in the early 1970s, the corps managed design and construction for an expansion of the naval facilities, with the US Navy as overall program manager. In the Royal Saudi Air Force program, the corps provided contracting and construction management support to the US Air Force Logistics Command for two major efforts to upgrade aircraft support facilities. Since 1966, the corps has worked with the Saudi army ordnance corps in operating and maintaining its logistics system.[1]

The decades–long reimbursable program in Saudi Arabia was designed not only to provide the host nation with military cantonments and naval facilities but also to prepare the Saudis to maintain and execute future programs themselves. During the program, a bond of mutual trust and confidence developed between the Saudi Arabian government and the United States that became as important as the military infrastructure and port facilities.. When the Iraqi invasion occurred, the Saudis' experience with the Corps of Engineers helped convince government officials that they could ask the United States to come into their country and that the United States would respect their customs, do professional work and leave when the work was completed. The "nation assistance" benefits from the program were critical to the successful execution of *Desert Shield* and *Desert Storm*.

Through its Middle East Division (MED), headquartered in Riyadh, Saudi Arabia, the corps managed a design and construction program in Saudi Arabia that, by the late 1980s, totaled an estimated $14 billion. From the early 1960s, the work was done on a fully reimbursable basis with the Saudi Arabian government paying for all design and construction. As the program neared completion in the late 1980s, the MED was redesignated as the Middle East/Africa



Street plan of King Khalid Military City. The circular area to the east incorporates a hospital, senior officers' quarters, with a parade ground, stadium and race track further south. KKMC was designed and constructed with an integrated air defense system. (*Inset*) The city center looking east.

Under [the 1965] agreement, the corps constructed three military cantonments: King Faisal Military Cantonment near the Yemen border; King Abdul Aziz Military Cantonment south of the Jordan border; [and] King Khalid Military City. The KKMC project, finished in 1988, was a complete city and base with facilities to support a projected population of over 50,000, an airfield, hospital and engineer center and school. Other work . . . included a headquarters complex for the Royal Saudi Air Force, an airborne and physical training school, King Abdul Aziz Military Academy, [and] the port at Ras al Mishab.

Projects Office (MEAPO), now Transatlantic Division, and its headquarters moved to Winchester, Virginia. At the time of the Iraqi invasion, MEAPO served as the corps' design and construction agent for the Middle East and Africa. It provided engineering, design, procurement and construction services for foreign defense forces and for other US government agencies operating in the region. In August 1990, MEAPO had field offices in Egypt, Oman, Bahrain, Kuwait, Morocco and Saudi Arabia.

The Department of Defense had designated USACE as its construction agent throughout the Middle East and Africa, except for Somalia, Kenya, Ethiopia and Djibouti. USACE, in turn, designated MEAPO as its executive agent for this mission in Saudi Arabia. In addition, USACE had signed a memorandum of agreement with Third US Army in 1986, which established USACE's role in providing engineer assistance. Third Army, a major subordinate

command of US Forces Command during peacetime, is also the US Army component (ARCENT) of US Central Command (CENTCOM). Third Army and USACE had developed a concept of operations for providing engineer support.[2]

Soon after the invasion, USACE commander, Lieutenant General Henry J. Hatch, and MEAPO commander, Colonel William A. Miller, recognized that CENTCOM would need corps assistance in providing facilities for troops. Concerned with the shortage of engineers in theater, a decision was made to use corps operations and maintenance (OMA) funds to deploy personnel, using Dulles International Airport as its aerial port of embarkation. The first corps engineer to deploy, Ben Wood, a civilian from MEAPO, left for Saudi Arabia on 13 August 1990. Two days later, Lieutenant Colonel Charles "Stoney" Cox, deputy commander of MEAPO, flew to Riyadh with two contracting officers, a construction engineer and a real estate specialist. Cox's team drove to Dhahran on 17 August and reported to the commander of the ARCENT Support Command (Provisional), Lieutenant General (then Major General) William G. Pagonis. Pagonis immediately tasked them to lease facilities for troops coming off the planes and continued to take advantage of corps expertise. With his small civilian cell, Cox established what later became known as the Dhahran Area Office (DAO), an organization that would grow as requirements mounted.[3]

There were few engineers in theater when the first corps representatives arrived, in part because CENTCOM had reduced the number of engineer units in the initial deployment to allow for the transport of maneuver units. No engineer command had yet arrived to manage construction requirements. Yet, the requirements for contract construction and real estate support were, as CENTCOM engineer Colonel Jay W. Braden described, "immediate and massive." The first elements of the 82d Airborne Division were arriving in Dhahran with no logistic structure to support them, no shelter in 120 degree heat and no sanitation facilities.[4]

There were few engineers in theater when the first corps [elements] arrived, in part because CENTCOM had reduced the number of engineer units in the initial deployment to allow for the transport of maneuver units. No engineer command had yet arrived to manage construction requirements. Yet, the requirements for contract construction and real estate support were, as CENTCOM engineer Colonel Jay W. Braden described, "immediate and massive."

Miller arrived in Riyadh in early September and established a headquarters element, MEAPO–SWA (Southwest Asia). As the defense contract construction agent, MEAPO–SWA was a theater asset under the operational control of CENTCOM, and Miller determined that it could best support all service components by collocating with the CENTCOM engineer

In Saudi Arabia . . . time became the primary concern, then quality and cost. On occasion, the DAO staff completed projects in 30 days that ordinarily would have taken six to nine months to complete. To expedite construction, the DAO staff drew on its knowledge of the types of materials available in the region and grappled with shortages of some critical materials and equipment, particularly heavy haul equipment.

and the Regional Contingency Construction Management (RCCM) cell in Riyadh. Meanwhile, MEAPO's DAO continued to provide direct support to the ARCENT Support Command (Provisional), which later became the 22d Support Command (SUPCOM) and other services in the Eastern Province of Saudi Arabia.[5]

One of the corps' major missions in support of *Desert Shield* and *Desert Storm* was to contract for construction. Its first major construction contract was for six 5,000–man base camps, later called life support areas. The urgency for the contract was great not only because troops in the desert needed the facilities as quickly as possible but also because the emergency military construction money that would be used to fund these base camps had to be obligated by 30 September 1990, the end of the fiscal year. DAO went from developing the criteria for the life support areas to the award of the contract in four weeks. The corps issued the request for proposals for the life support areas on 19 September 1990 and awarded the contract to Mechanical and Civil Engineering Saudi Arabia, Ltd. on 28 September 1990. The $26 million contract called for the construction of six initial standard base camps for units deployed to Saudi Arabia, to include dining facilities, showers, latrines, areas for tents and compacted roadways.[6]

The corps also awarded construction contracts for the application of dust palliative. Blowing dust chewed up expensive equipment and threatened the safety of helicopter pilots trying to take off or land in the thick clouds. Dust palliative works well on compacted material, but when used on a loose surface such as sand, it quickly breaks up under foot traffic. Contractors tried various means of dust palliative, including emulsified asphalt CSS–1, diesel fuel or crude oil, with varying degrees of success.

Other construction contracts provided for water wells, road repair and construction and heliports. The benefits from these contracts far outweighed the costs. As the 22d SUPCOM engineer, Lieutenant Colonel Kenneth W. Cargill observed, $6 million did not seem like an unreasonable cost for a heliport that would hold 100 Apache helicopters, each worth $6 million. The 101st Aviation Brigade spent $84 million between August and November on rotor blades and engines for their helicopters, while paving a heliport at King Fahd International Airport cost only $4 million.[7]

Funding the costly construction projects, however, was a major problem. US law limited the funding of construction with OMA funds to projects under $200,000. Given the size and expense of the projects required, this limit was woefully inadequate. Use of military construction funds was a time–consuming process that required congressional approval. In October, Saudi officials indicated a willingness to pay US costs incurred in *Desert Shield*. The Saudi Arabian ambassador to the United States, HRH Prince Bandar bin Sultan, accepted a proposal to send a US team to work out procedures for host nation support. The director of the Joint Staff, Lieutenant General Michael P. C. Carns, directed Major General James W. Ray, director of Military Programs, Headquarters, USACE, to travel to Saudi Arabia to put in place an operating process that used Saudi money to pay for fuel, water, transportation and facilities. Ray, who had spent five years in Saudi Arabia and three in Europe working on projects that involved host nation support agreements, was well qualified for the mission.

Ray and a team of specialists drawn from the Joint Staff and the Office of the Secretary of Defense arrived in Saudi Arabia on 17 October. They developed and negotiated an agreement

[The corps'] first major construction contract was for six 5,000–man base camps. . . . The urgency for the contract was great not only because troops in the desert needed the facilities as quickly as possible but also because the emergency military construction money that would be used to fund these base camps had to be obligated by 30 September 1990, the end of the fiscal year.

for host nation support, which Major General Dane Starling, CENTCOM J4 (logistics director), and Saudi deputy commander for Saudi Joint Forces, Major General Abdul Aziz Al Sheik, signed. Under the agreement, which became effective 1 November 1990, the Saudi Arabian government would provide, at no cost to the United States, fuel, transportation, water, food and facilities to support US forces from the time of initial deployment.[8] Before Ray left, the Saudis presented him with a check to the US Treasury for $760 million to cover in–country expenses from 7 August to 1 November.

Ray's team recommended to the CENTCOM commander that he establish a 16– to 17–person cell, headed by a general officer, to monitor and implement host nation support, and CENTCOM approved the recommendation. Brigadier General Patrick M. Stevens IV, division engineer from the corps' North Pacific Division, arrived in late November to head this cell and serve as Starling's deputy.

Formal procedures for contract construction evolved over time. Service components developed their requirements and submitted them through channels to the CENTCOM RCCM cell. The RCCM, which consisted of the CENTCOM engineer, representatives from the joint component services and the designated defense construction agent (MEAPO–SWA), consolidated, validated and prioritized the requirements. CENTCOM, then, compiled the priority list for the theater, integrating Army priorities with those of the other services. After execution of the host nation support agreement, construction requirements could be executed by one of three means:

- Saudi construction (host nation support).
- US construction contract.
- US troop construction.

A combined civil–military engineer board made up of Saudi, CENTCOM and MEAPO representatives met on a regular basis to determine which of these methods should be used.

One DAO real estate specialist maintained that the corps got the best price it could in that market and summed up the real estate effort by saying, "I think we got what we were trying to accomplish. We were trying to get our troops out of the sun, out of the sand, and into some air conditioning. . . . I think we've done something that we can be proud of."

MEAPO provided technical oversight of contracts to be executed by the Saudis to ensure that US requirements were met and provided the Saudis with design and specification packages ready for contract advertisement.[9]

The DAO received the CENTCOM priority list twice a week. When a project showed up on the list, DAO began the design work. DAO often used the Army's standardized designs (the Army Facilities Component System) but modified them to shorten construction time and cut costs. Normally, USACE stresses the following priorities in construction: quality, cost and time. In Saudi Arabia, however, time became the primary concern, then quality and cost. On occasion, the DAO staff completed projects in 30 days that ordinarily would have taken six to nine months to complete. To expedite construction, the DAO staff drew on its knowledge of the types of materials available in the region and grappled with shortages of some critical materials and equipment, particularly heavy haul equipment. As part of their construction mission, corps personnel leased construction equipment for engineer units, but they found that the contractor equipment available in Saudi Arabia was often in poor condition.[10]

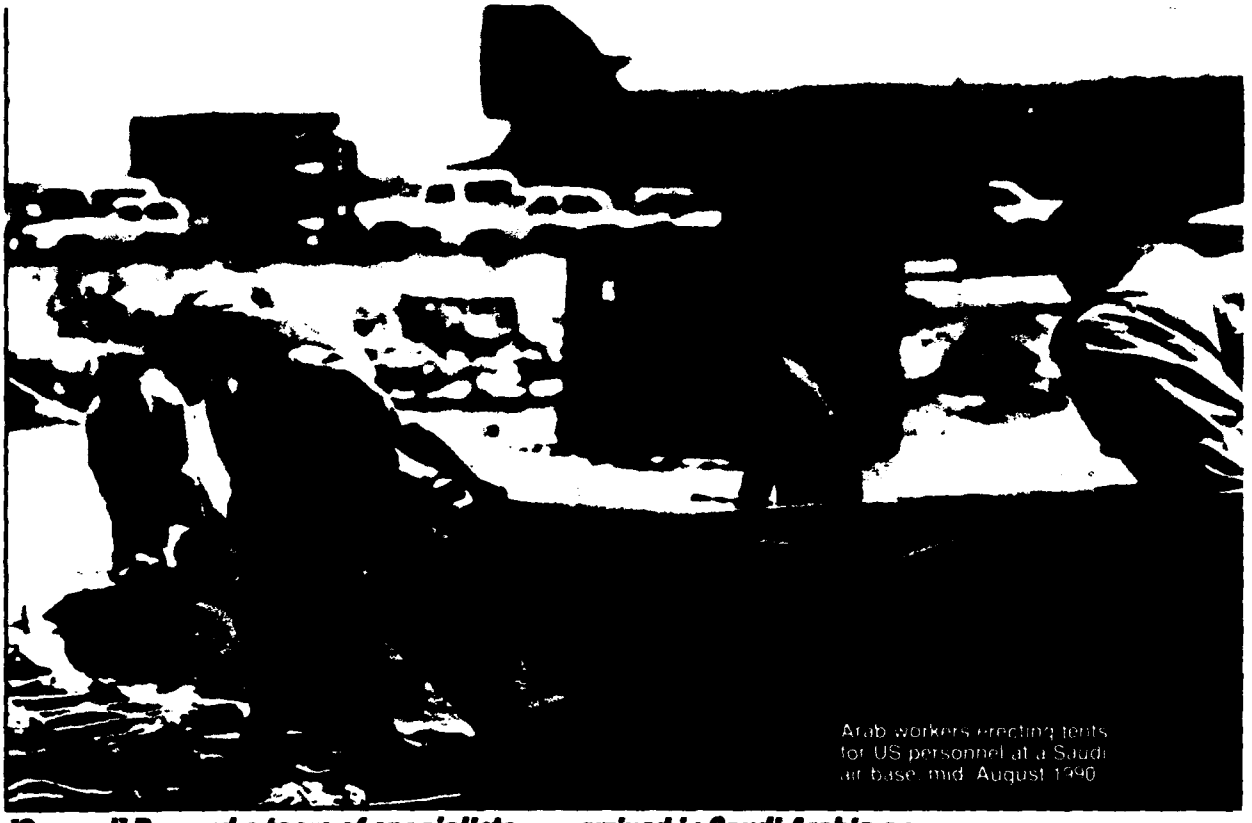
Finding contractors in the region capable of completing the work in a specified time was difficult. Although there were many capable and expert construction firms in Saudi Arabia, corps representatives occasionally found themselves in the position of pulling contractors along, showing them how to save time, operate equipment, make changes in scheduling and perform certain types of work faster and more effectively. Saudi contractors occasionally worked alongside engineer units. For example, at KKMC, in the tense days leading up to the air war, engineer troops provided the contractor with dump trucks, a bulldozer and scrapers, and some night lights so he could work far into the night.[11]

In addition to construction contracts, MEAPO–SWA awarded various types of service contracts. By mid–September, it had awarded 12 service contracts in theater for field showers, burnout latrines, washstands and temporary buildings to meet storage, sleeping or maintenance needs. Latrines, showers and washstands were among the largest, most immediate requirements. When standard designs for latrines, showers and washstands, which dated from the Vietnam era, proved to be inadequate, the DAO staff modified the old designs and experimented with new ones. It awarded contracts for 5,000 latrine, shower and washstand units at a time. With each award, the staff continued to modify the design to make the units safer and more durable.[12]

More than construction and service contracts, however, real estate activities dominated the corps' effort in Saudi Arabia. US forces had no authority to seize the property they required, so they had to negotiate leases with the property owners. DAO provided real estate support for the Army, Navy and Marines—leasing billets, office space, storage facilities, mess halls, hardstands, warehouses and cold storage.

On 12 September 1990, the SUPCOM reported that real estate leasing was the predominant engineer activity. Officials were finalizing an average of four leases a week with private landowners and businesses, and the average lease provided housing for 500 people. With 7,000 to 14,000 soldiers arriving each week, however, a backlog quickly developed. By early November, there were 97 leases totaling about $94 million. During the peak period just before 1 November, the corps' 17 real estate specialists in Saudi Arabia leased 40 facilities in 17 days.[13]

The real estate program presented unique and significant challenges. Real estate specialists had difficulty arranging for facilities because they did



Arab workers erecting tents for US personnel at a Saudi air base, mid August 1990

[General] Ray and a team of specialists . . . arrived in Saudi Arabia on 17 October. They developed and negotiated an agreement for host nation support, which . . . became effective 1 November 1990, the Saudi Arabian government would provide, at no cost to the United States, fuel, transportation, water, food and facilities to support US forces from the time of initial deployment.

not know how long the facilities would be needed. The Saudis, who have a long tradition of bartering, were very astute negotiators, often requiring lease payment for one year in advance, which became very costly. Eventually, real estate specialists were able to modify this requirement so that the payment would be either quarterly or every six months, but initially, they had no choice. Sometimes the DAO succeeded in negotiating prices downward but not always. Sometimes Pagonis personally intervened, negotiating directly with property owners or appealing to government officials.[14] Determining what was a just and reasonable value for properties in an inflated market remained a problem. One DAO real estate specialist maintained that the corps got the best price it could in that market and summed up the real estate effort by saying, "I think we got what we were trying to accomplish. We were trying to get our troops out of the sun, out of the sand, and into some air conditioning. . . . I think we've done something that we can be proud of."[15]

The process for handling real estate requirements evolved over time. Initially, in early September, the troop unit identified its requirement, and the requirement went through command channels to the SUPCOM. If the Saudis had no facilities to meet the need, the requirement went to the SUPCOM engineer, and priorities were established. The SUPCOM then directed the DAO to locate and lease the required real estate. SUPCOM priorities changed daily, sometimes hourly.

When the requirements continued to multiply, SUPCOM officials established a board to consolidate the requirements and set priorities. Once the requirement was validated and it was determined that the Saudis could not fill it, the requirement went to the SUPCOM engineers for execution. Terrain managers for all the major commands, the SUPCOM engineers and DAO

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real estate specialists met each week to study the list of requirements and establish a priority list. At one point, the list included 80 items. After the board developed a recommended list, it went to Pagonis for approval and became the priority list for the week. The board met again the following week to revalidate the list and to integrate new requirements. Each major subordinate command operating through its terrain manager got a vote on the list.[16]

Initially, the SUPCOM funded the real estate leases, but under the Host Nation Support Agreement negotiated by Ray, the Saudi government agreed to lease facilities for US forces. By 7 November 1990, the last lease requirements had been turned over to the Saudis. At that time, DAO was closing 3.8 leases a day, and 1,200 to 1,500 people were moving into facilities each day. When the Saudis assumed responsibility, this activity came to a complete standstill.

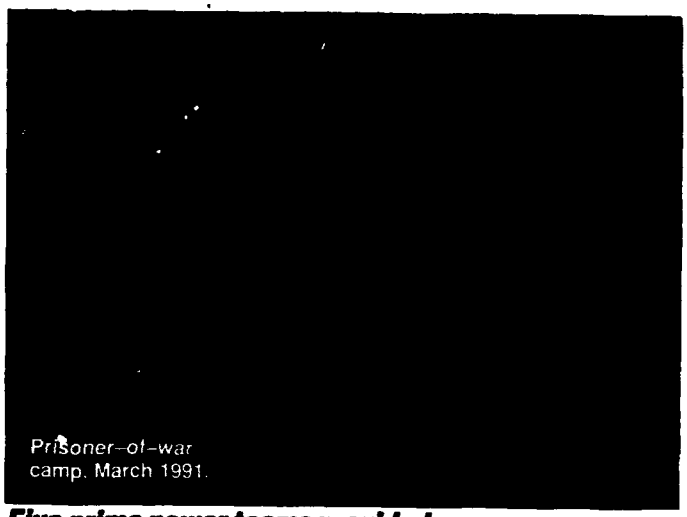
The Saudi government had no experienced real estate specialists. DAO prepared a package with the requirement and the appraisal, and using that package, the Saudis opened negotiations with the property owner. They sometimes attempted to renegotiate for a lower price, without involving the corps specialists in the process. The Saudis required units to revalidate their requirements and evaluate alternative sites before they would fill their requirements. The SUPCOM fell further and further behind in its real estate acquisition timetable, a situation that became more critical as troops from the VII Corps poured into the theater.[17]

In addition to its traditional contract construction, contract services and real estate missions, USACE assumed responsibility for administering a contract between the Administrative Committee for the Gulf Peace Fund and Bechtel International Systems, Inc. The Gulf Peace Fund was established to administer $2 billion of assistance in kind by the government of Japan to support US forces engaged in *Desert Shield*. The money was to be used only for projects outside Saudi Arabia not funded by host nations and for contracts in Saudi Arabia for materials, urgently needed by US forces, that the Saudis could not provide.[18]

On 18 December 1990, CENTCOM directed MEAPO to develop a cost reimbursable contract to be awarded by the Gulf Peace Fund for the performance of engineering and project management services in support of *Desert Shield*. Fund officials signed a short–term contract with Bechtel on 22 January 1991. The format of the contract was based on the American Institute of Architects' standard format for cost reimbursable contracts. Under the contract, CENTCOM provided the requirements. MEAPO assisted in establishing criteria, concept designs, and so forth, that formed the basis of a tasking to the contractor, and it managed the contract and controlled the funding. Bechtel proved to be very responsive, and the arrangement worked well.[19]

While MEAPO–SWA and DAO provided support to *Desert Shield* and *Desert Storm* in theater, other corps districts, divisions and laboratories also made significant contributions. The corps' Wilmington District, for example, responded to a request from the Military Traffic Management Command to clear a [illegible] area in Cape Fear River in order to facilitate the transport of troops and equipment. The district prepared plans and specifications for dredging at the port of Morehead City, North Carolina. Charleston District, which was responsible for maintaining harbors, expedited a planned contract to improve the Port of Charleston, South Carolina, to meet potential mobilization requirements.[20]

On 10 August 1990, US Forces Command headquarters asked the Department of the Army to task the 535th Engineer Detachment of the Engineering and Housing Support Center (EHSC) to provide prime power teams to support ARCENT. The US Army Prime Power Program, which is managed and executed under the direction of the chief of engineers, maintains an inventory of prime utility power generation, transmission and distribution equipment for support of military contingency plans. The primary mission of a prime power team is to install, operate and maintain a 3–megawatt power plant and up to 3.6–kilowatt amperes of medium voltage distribution equipment. In addition, it provides



Prisoner–of–war camp, March 1991.

Five prime power teams provided support in the theater. . . . [They] conducted over 300 missions, including design, procurement and installation of critical systems to connect electrical converters for eight Patriot air defense batteries . . .[and] provided power for the ARCENT main operations and intelligence center, enemy prisoner–of–war camps, hospitals, clinics, airports, food distribution centers, telecommunications centers and certain Kuwait government buildings.

expertise and technical advice on electrical power systems as required.

EHSC activated a 16–man prime power team at Fort Bragg, North Carolina, on 11 August 1990 and a 16–man team at Fort Benning, Georgia, on 28 August. The first 16–man team and three–man company headquarters deployed on 5 September. When they arrived in Saudi Arabia, they were attached to the SUPCOM. The team had no power production equipment with them initially, so they worked on electrical problems such as power surges.[21]

Ultimately, five prime power teams provided support in the theater during *Desert Shield* and *Desert Storm* and later in the reconstruction of Kuwait and Operation *Provide Comfort*. Team 2 deployed on 22 November 1990. Teams 3 and 4, and a company headquarters deployed in March 1991, and the last team deployed on 1 August 1991. By late September 1991, they had conducted over 300 missions, including design, procurement and installation of critical systems to connect electrical converters for eight Patriot

The Waterways Experiment Station in Vicksburg, Mississippi, provided support in the form of dust control, mobility modeling and evaluation, military hydrology and advice on the oil spill cleanup. . . . WES used its Army mobility model to determine the effects of tire pressure and vehicle configuration on desert mobility.

air defense batteries. With their 750–kilowatt generators, they provided power for the ARCENT main operations and intelligence center, enemy prisoner–of–war camps, hospitals, clinics, airports, food distribution centers, telecommunications centers and certain Kuwait government buildings. Team 2 members provided power and electrical support for the cease–fire talks in southern Iraq.[22]

Support from the USACE laboratories was varied and far–reaching. Through the mapping, terrain analysis and imagery intelligence provided by the corps' Engineer Topograhic Laboratories, commanders acquired valuable knowledge of the battlefield. The Waterways Experiment Station (WES) in Vicksburg, Mississippi, provided support in the form of dust control, mobility modeling and evaluation, military hydrology and advice on the oil spill cleanup. In the first months, the Army had problems with wheeled vehicle mobility and with tires—insufficient traction, improper tire pressure and poor tire performance. WES used its Army mobility model to determine the effects of tire pressure and vehicle configuration on desert mobility. It provided guidance on tire inflation pressures and suggested replacement tires for vehicles, which improved overall ground mobility. In November, a WES official traveled to Saudi Arabia as part of a team to analyze tire damage, type, endurance, trafficability, composition, wear and soil interaction on various vehicles. Other officials deployed to provide training and expertise in smoke obscurants to support the Air Force.

WES also provided support in the area of camouflage, concealment and deception (CCD). A WES CCD team assisted the VII Corps, 24th Infantry and 3d Armored divisions and US Central Command Air Force. It helped them procure camouflage materials and trained them in the use of CCD materials. Using a computerized model, WES provided the coalition forces with data to predict water levels, currents and wave conditions in the Persian Gulf. It stepped up its research on dust palliatives in a desert environment and developed a manual for selecting proper materials and methods for dust control.

The corps' Construction Engineering Research Laboratory, Champaign, Illinois, had been developing an integrated Theater Construction Management System. In September 1990, it provided developmental software and a computer hardware platform to two deployed units with encouraging results. The Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire, used its experience from work on the trans–Alaska pipeline to provide information to the Engineer School on crossing the large pipelines that the Iraqis used as obstacles. In addition, the laboratory used its satellite imagery/remote sensing capability to provide information on the location and movement of the massive oil slick in the Persian Gulf.[23]

USACE responded quickly to the contingency in the Middle East and helped fill the void created by the delayed flow of engineer troops. The first USACE personnel to deploy, with their previous experience in theater, provided invaluable support to the CENTCOM commander in receiving and bedding down troops. Over the course of *Desert Shield* and *Desert Storm*, hundreds of civilian volunteers, representing almost every corps district and division, deployed to the theater of operations. Many of these individuals were on site when hostilities began and remained throughout the air war and the ground war. No comprehensive policies or regulations existed governing the deployment and sustainment of Department of Defense civilians in a war zone. Yet, their work was critical. The Army did not have the required real estate expertise among its military personnel. Pagonis noted that the

United States had the lowest medical sick rate of any war in history and attributed that directly to the engineer efforts in building latrines, showers and washstands, and renting facilities. Summarizing the role of DAO personnel, he observed, "... they did exactly what I asked them to do."[24]

Efforts to meet the construction and real estate requirements of US forces, however, would not have been as successful if the troops had not deployed to a part of the world that had an existing supply of contractors, materials and facilities. Without that supply of fuel, equipment and contractors, the engineers' ability to support the troops would have been significantly curtailed. US forces were also fortunate that they did not have to rely solely on time-consuming US funding mechanisms. The Host Nation Support Agreement and the Gulf Peace Fund allowed the USACE staff and others to conduct their real estate and contract construction missions more effectively and more successfully.

Efforts to meet the construction and real estate requirements of US forces, however, would not have been as successful if the troops had not deployed to a part of the world that had an existing supply of contractors, materials and facilities.

USACE contributions were diverse and significant. Corps personnel worked under difficult conditions to provide for the well-being and safety of thousands of troops. They developed creative solutions to the problems they encountered, whether it be devising new procedures or new designs for projects. After successfully completing its mission during the war, USACE went on to play a key role in the reconstruction of Kuwait. ***MR***

NOTES

Note: Unless otherwise noted, all records cited below are located in the Research Collections of the Office of History, US Army Corps of Engineers, Fort Belvoir, Virginia.

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2. "Memorandum of Agreement Between Third United States Army and the US Army Corps of Engineers," 29 September 1986.
3. Interview with LTC Ken Cargill, 22d Support Command (SUPCOM), Dhahran, Saudi Arabia, 25 March 1991, 2 and 9; interview with Ben Wood, Kuwait Emergency Recovery Office (KERO), Kuwait City, 6 April 1991; interview with LTC Charles S. Cox, Transatlantic Division, Winchester, Virginia, 21 May 1991, 14–16; interview with LTG William G. Pagonis, 22d SUPCOM, Dhahran, Saudi Arabia, 27 March 1991, 15; message 141800Z, 14 September 1990, USCINCCENT J 4/7 to ARCENT, HQ EOC #436. All interviews cited herein were conducted by Dr. Janet A. McDonnell.
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7. Interview with CPT Paul Cudney, DAO, Dhahran, Saudi Arabia, March 1991, 1; interview with Cargill, 18.
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9. Interview with LTC Cox, 41–42; message 141800Z, 14 September 1991, USCINCCENT J 4/7 to ARCENT.
10. Interview with MAJ James Brooks, DAO, Dhahran, Saudi Arabia, 26 March 1991, 27; interview with Cox, 21 May 1991, 48; interview with Ceasar Santucci, KERO, Kuwait City, 5 April 1991, 20–24; interview with COL Phil Carroll, ARCENT Headquarters, Riyadh, Saudi Arabia, 1 April 1991, 6–7; interview with CPT Lee Staab, DAO, Dhahran, Saudi Arabia, 27 March 1991, 7.
11. Interview with CPT Steve Adams, 31 March 1991, Riyadh, Saudi Arabia, 57–58, 63; interview with Santucci, 63.
12. *Middle East/Africa News*, vol. 5, no. 9, September 1990, 8; interview with MAJ Brooks, 21; interview with Santucci, 33–35.
13. Periodic Report no. 6, Miller to Sobke, 16 September 1990.
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15. Interview with Robert Dragonette, DAO, Dhahran, Saudi Arabia, 18.
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22. "Information Paper," EHSC, 23 September 1991.
23. "US Laboratory Support to Operations *Desert Shield* and *Desert Storm*," (draft) HQUSACE, Directorate of Research and Development," nd, 6–10.
24. Interview with Pagonis, 1 and 16.

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Janet A. McDonnell is a historian with the Headquarters, US Army Corps of Engineers. She holds a Ph.D. from Marquette University. She has published several books and articles and is currently writing a history of the corps' role in the Gulf War and a history of the Army's role in the reconstruction of Kuwait.

Engineer Support in the COMMZ

Major General Terrence D. Mulcahy,
US Army Reserve

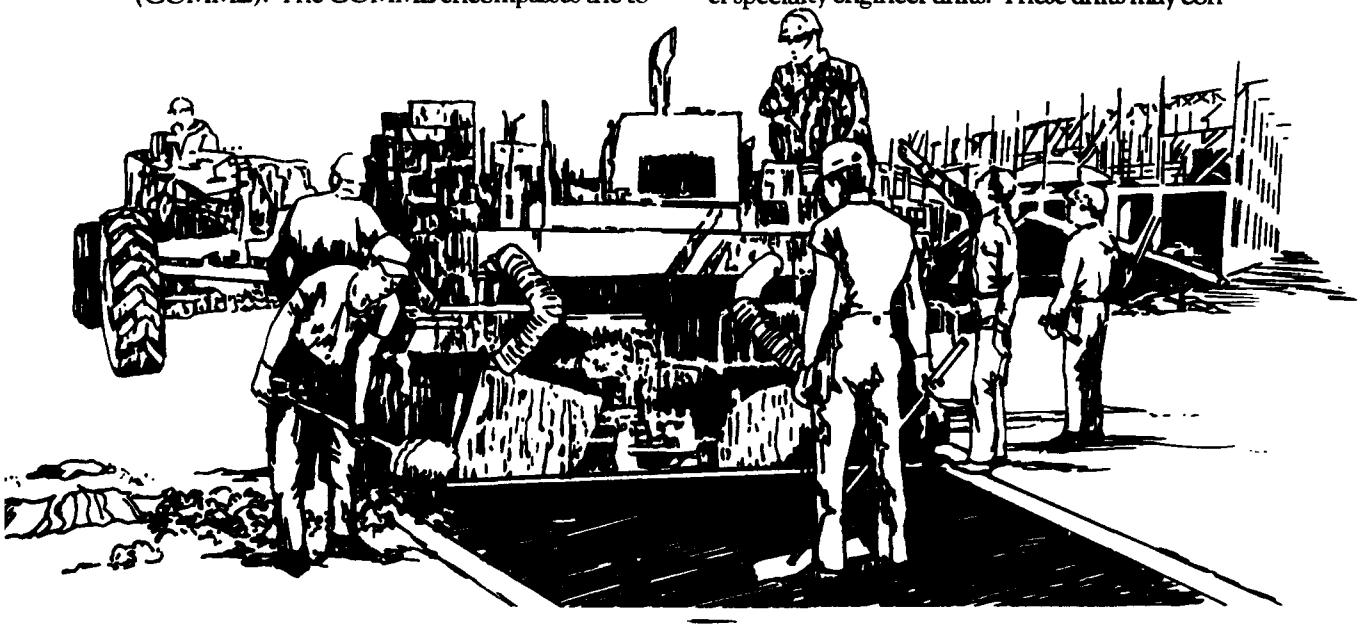
The Gulf War reinforced the need for engineer support for combat operations. The author reviews the missions of the 416th Engineer Command at the early stages of the force buildup. He discusses the changes in engineer support as the deployment grew. Finally, the author looks at missions planned and prepared for, but not executed.

THE Gulf War conclusively demonstrated the need for engineers to support combat operations in the area behind the corps' rear boundary. A professional engineering effort in this area increases the mobility, survivability and sustainability of forward tactical and logistic units.

To manage the rear area engineering effort, the 416th Engineer Command (ENCOM) from Chicago, Illinois, deployed an advance party on 31 October 1990. On 29 November, the total command was activated, and it became operational in Saudi Arabia by 12 December.

Current Army doctrine provides for two engineer commands (the 416th and the 412th in Vicksburg, Mississippi) with each having the responsibility for providing theater army (TA) engineer support in the communications zone (COMMZ). The COMMZ encompasses the total theater area behind the forward-deployed combat units. Command and control of echelons above corps (EAC) engineer units is an ENCOM's primary mission. Typical missions include airfield maintenance, road repair and construction of storage structures, pipelines, hospitals and enemy prisoner-of-war camps.

The number and types of EAC engineer units assigned to a theater are dependent upon the size of the sustainment base, existing support facilities, availability of host nation support and the nature of the threat. The preliminary rule of thumb for planning the task organization of an ENCOM in a theater is one engineer brigade and one topographic battalion for each forward-deployed maneuver corps. In addition to combat heavy battalions, an ENCOM may include other specialty engineer units. These units may con-



sist of port construction companies, dump truck companies, construction support companies and pipeline companies. Detachments may round out larger units by providing well drilling, prime power, diving and real estate expertise.

Shortly after Iraq invaded Kuwait, the ENCOM began preparations for its expected activation. ENCOM staff engineers were summoned to Central Command (CENTCOM) Headquarters in Florida to analyze and plan engineer requirements using the civil engineer support plan (CESP). A major contributing factor to the ENCOM's ability to assess the engineer requirements in the theater has been the extensive data base and software of the CESP generator. This tool provided timely initial projections of the engineering requirements for the Gulf War and the estimated costs of supporting the requirements. This information was vital for the ENCOM in developing and accomplishing missions that were based on actual planning factors.

Deployment

During the early days of Operation *Desert Shield* (August–October) the ENCOM's role focused on providing individual engineer expertise to various locations within the United States. This individual support (via volunteers) changed with the activation of a 25–man cell on 15 October 1990. This cell became the command's advance party into the theater on 31 October 1990. This deployment was quickly followed by the activation and deployment of the full ENCOM in late November.

416th ENCOM Units

411th Engineer Brigade	808th Engineer Company
109th Engineer Group	387th Engineer Company
265th Engineer Group	229th Engineer Company
926th Engineer Group	269th Engineer Company
1030th Engineer Battalion	535th Engineer Detachment
864th Engineer Battalion	624th Engineer Detachment
844th Engineer Battalion	308th Engineer Detachment
43d Engineer Battalion	376th Engineer Detachment
30th Engineer Battalion	1440th Engineer Detachment
1/13th Engineer Company	775th Engineer Detachment
155th Engineer Company	322d Engineer Detachment
181st Engineer Company	747th Engineer Detachment
259th Engineer Company	683d Engineer Detachment
515th Engineer Company	264th Engineer Detachment

A major contributing factor to the ENCOM's ability to assess the engineer requirements in the [Gulf] theater has been the extensive data base and software of the CESP generator. This tool provided timely initial projections of the engineering requirements for the Gulf War and the estimated costs of supporting the requirements.

Because of the limited engineer equipment in theater and the relatively long shipping distance, the forward combat corps were given control of available combat–ready engineers. The 416th ENCOM, with one brigade (411th from New York City), a topographical battalion, two combat heavy engineer battalions (the 43d and 864th) and various engineer companies and detachments, began its engineering operations. With these limited resources, the ENCOM was responsible for engineering tasks in the COMMZ that included a triangular area stretching from Dhahran to King Khalid Military City (KKMC) as the northern border, KKMC to Riyadh as the western border and Riyadh to Dhahran as the southern/eastern border.

Primary missions of the ENCOM included building and repairing roads, laying fuel pipelines, constructing enemy prisoner–of–war camps, managing theater Class IV construction materials, building defensive positions for rear area troop compounds and constructing temporary storage buildings.

Role and Experiences

The role of the ENCOM during the Gulf War crisis evolved through the various phases of the war. During *Desert Shield*, the role was to establish itself as the Army theater engineer. This was accomplished by interfacing with the host nation, the other US services, Middle East/Africa Projects Office (MEAPO) and the engineer brigades of the two corps. Additionally, the ENCOM provided the planning and control for the

Engineers laying asphalt in front of an air base K-Span.

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engineer requirements in the COMMZ.

During Operation *Desert Storm*, the ENCOM's role became one of coordinator to keep track of existing projects, to anticipate new projects as the war progressed and to plan tasks for incoming engineer units. Realistically, one could not plan on such a short war, and the ENCOM was preparing for the needs of an extended battle where units under its control may be attached to the combat corps. The ENCOM needed to be ready to quickly get incoming engineer units up and running.

During Operation *Desert Calm*, the ENCOM's role became that of a consultant to determine the engineer effort required to provide a minimum life support structure for Kuwait and to provide the necessary engineer support for the relocation of a number of refugees located in the Basrah area and into Rafhah, Saudi Arabia. The second responsibility involved planning the engineer effort for redeploying US troops, which included providing vehicle washing facilities of mammoth scale.

For Operation *Desert Farewell*, the ENCOM provided planning to determine the remaining engineer effort required to complete the return of the troops to home bases and to establish more comfortable living conditions for the troops that were required to remain in country.

By April, specific command and control responsibilities extended to an engineer brigade, three engineer groups, three combat heavy engineer battalions, one topographic battalion, one headquarters and headquarters battalion, nine engineer companies and 10 specialized engineer detachments. With these subordinate units, the ENCOM provided engineer support to Regional Contingency Construction Management (RCCM), Army Forces US Central Command (ARCENT), Support Command (SUPCOM) and the MEAPO-Southwest Asia (SWA).[1] Management functions were performed for TA construction, Class IV, engineer equipment and disaster assistance teams (DAST) to Kuwait.

The RCCM functions were under the CENTCOM engineer office in Riyadh. ENCOM liai-

Trucks lined up at one of several huge vehicle washing facilities.

The ENCOM had direct command and control for the accomplishment of numerous engineer design and construction missions. These projects included construction, repair and maintenance of 2,200 kilometers of roads, construction of two 48,000–person enemy prisoner–of–war camps, well drilling and rehabilitation of wells, construction of helipads/aircraft beddown sites, construction of 408 kilometers of pipeline and assistance in constructing theater logistic bases.

son officers coordinated closely with ARCENT and the 22d SUPCOM to review project submissions, assist in the validation and project approval process and facilitate the execution of approved projects. The team also advised in prioritizing projects from all the US services to assure that the limited resources were distributed appropriately to meet critical mission requirements.

Throughout the entire campaign, ENCOM provided planning, execution and communications liaison between engineer forces in the theater. This liaison facilitated a fair allocation of scarce EAC engineer assets. Without this interface, numerous missions could not have been as effectively executed in support of the forward–deployed corps.

The ENCOM also directly supported the 22d SUPCOM in Dhahran and KKMC. The ENCOM deployed an element of approximately 40 engineers to KKMC (just south of the Iraqi border) to assist in the design, construction and management of engineer support for SUPCOM elements and the forward–deployed corps. Working through the 411th Brigade and 43d Engineer Task Force, projects included road construction, upgrading of A–10 Thunderbolt rearming pads, field hospital construction, construction of logistic storage structures, asphalt operations, quarry operations and the operation of a subtheater Class IV materials storage/issue yard. These missions were successful, and over 100 miles of paths/roads were constructed, which permitted the combat troops to move into the rear area unnoticed by the enemy.

It was a challenge to have the construction materials in place and ready to be used at a moment's notice. Construction could not be started until the last minute, if surprise was to be an element of the strategy. The Iraqi high command's total surprise at the end–around strategy is a testimonial to the effort of the engineers to supply these materials upon short notice.

Engineer construction planning and management support to the SUPCOM at Dhahran was provided through an ENCOM management

During Operation* Desert Storm, *the ENCOM's role became one of coordinator to keep track of existing projects, to anticipate new projects as the war progressed and to plan tasks for incoming engineer units. Realistically, one could not plan on such a short war, and the ENCOM was preparing for the needs of an extended battle where units under its control may be attached to the combat corps.

team, the 411th Engineer Brigade and the 864th Engineer Task Force. Typical missions included pipeline construction, storage buildings, vehicle wash racks, real property maintenance, real estate acquisition, procurement actions, environmental engineering support and MEAPO–SWA liaison.

During the initial stages of the deployment to SWA, the MEAPO–SWA office located at Dhahran provided contracting for construction projects, real estate acquisitions and construction supervision for all the US services within the theater. After the arrival of the ENCOM in theater, support was extended to MEAPO–SWA. This support consisted of assisting in design, real estate inspections, construction inspections and programming. One major project included the design and construction of 13 major heliports capable of supporting over 2,500 rotary–wing aircraft throughout the theater.

The ENCOM had direct command and control for the accomplishment of numerous engineer design and construction missions. These projects included construction, repair and maintenance of 2,200 kilometers of roads, construction of two 48,000–person enemy prisoner–of–war camps, well drilling and rehabilitation of wells, construction of helipads/aircraft beddown sites, construction of 408 kilometers of pipeline and assistance in constructing theater logistic bases.

Nonconstruction missions accomplished by the ENCOM included preparation of a hazardous waste policy for CENTCOM, distribution of

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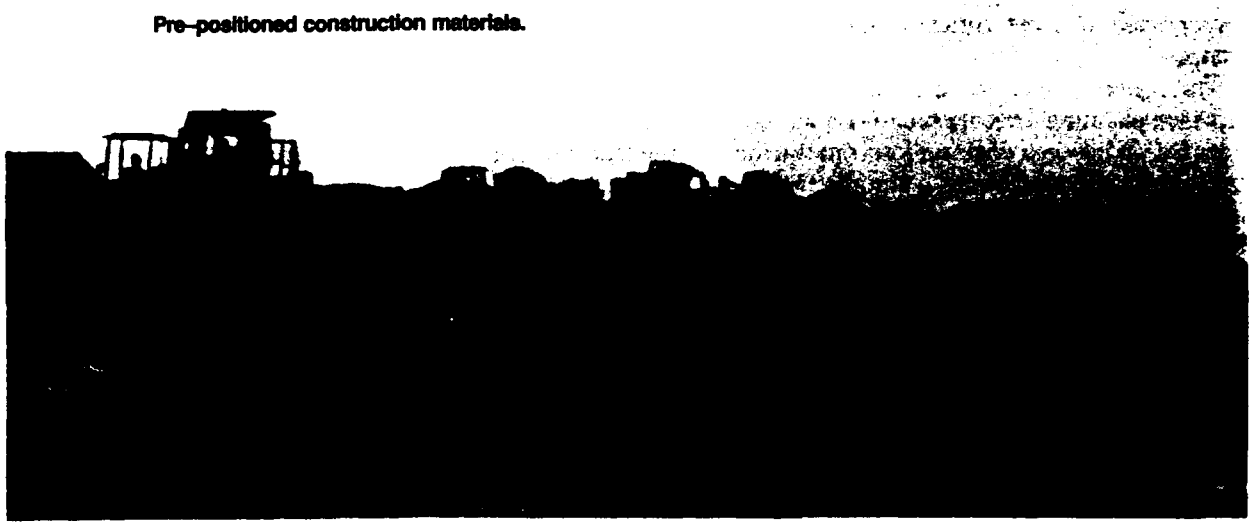
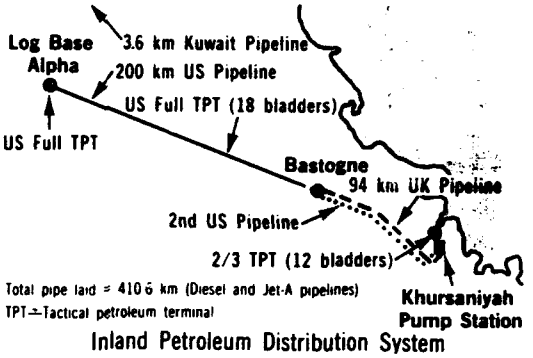
Pre–positioned construction materials.



over 11 million maps, development of the theater plan for environmental cleanup, prime power support for theater operations and real property management support to theater logistic bases.

All construction missions accomplished by the ENCOM relied heavily upon the timely acquisition of Class IV construction materials. The ENCOM, through its in–house logistic support capabilities, civilian contracting expertise, CESP requirements projections and requisitioning procedures, managed the procurement and distribution of theater Class IV materials to all US services. Examples of some of the typical construction materials acquired and employed include 500,000 cubic meters of gravel, 170,000 metric tons of asphalt, 93,000 cubic meters of ready–mix concrete, 68,800 metric tons of construction steel and various plumbing and electrical/power production materials. The costs of these materials exceeded $64 million.[2] In addition to the acquisition of these materials, contracting for engineer troops to operate civilian quarry sites and civilian asphalt plants was needed because the local business owners could not get workers to continue to work during the combat phase of the war.

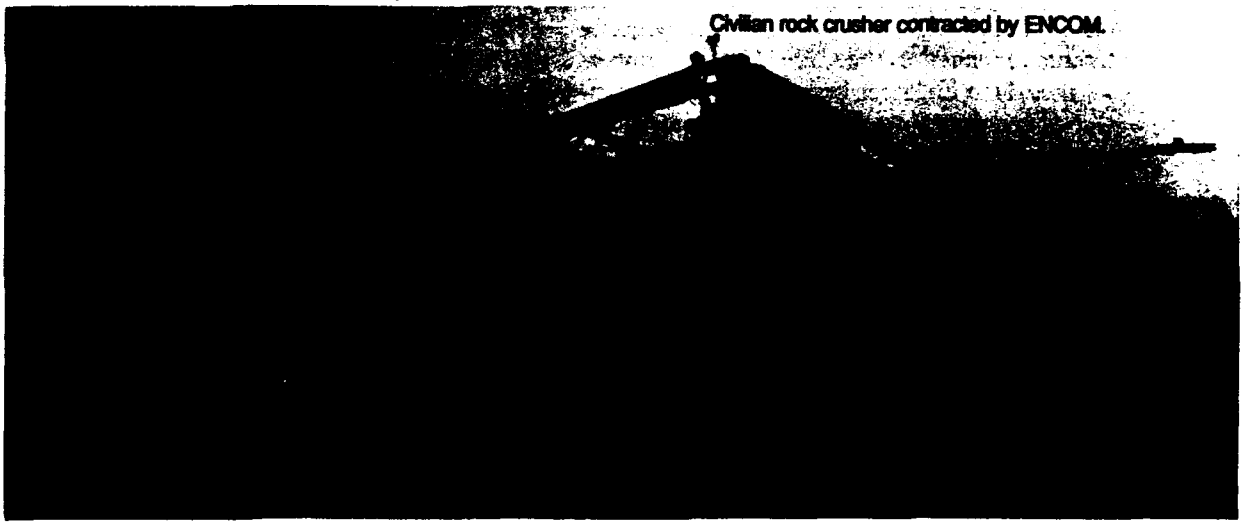
As the ENCOM's EAC units began arriving in theater, personnel frequently arrived sooner



Inland Petroleum Distribution System

than their equipment. With the mission list within the COMMZ still growing, it became apparent that the authorized engineer equipment organic to the units would be insufficient to complete the assigned missions within time requirements. Through the efforts of the ENCOM, a team was organized that developed a plan and procedure for procuring

ENCOM . . . managed the procurement and distribution of theater Class IV materials to all US services. Examples of some of the typical construction materials acquired and employed include 500,000 cubic meters of gravel, 170,000 metric tons of asphalt, 93,000 cubic meters of ready–mix concrete, 68,800 metric tons of construction steel and various plumbing and electrical/power production materials.


Civilian rock crusher contracted by ENCOM.

Engineers manning a pumping station along one of the military pipelines.

Throughout the entire campaign, the ENCOM provided planning, execution and communications liaison between engineer forces in the theater. This liaison facilitated a fair allocation of scarce EAC engineer assets. Without this interface, numerous missions could not have been as effectively executed in support of the forward–deployed corps.

needed engineer equipment. Based on civilian and military engineer experience and requirements generated in the CESP and by members of the 411th Engineer Brigade, the team established and prioritized a list of 154 major items of engineering equipment for procurement. This equipment was procured within Saudi Arabia and delivered in time to meet the mounting engineer construction requirements.

The ENCOM was also tasked with developing a systematic construction management process for tracking and accomplishing theaterwide missions. Two areas where the ENCOM established theaterwide policy procedures were the preparation and submission of DD Form 1391, *Military Construction Project Data*, and the requisition and construction of K–Span/Sprung Structures for logistic sustainment operations. The ENCOM processed 72 DD Forms 1391 for an estimated construction cost of $278 million and constructed 41 logistic storage/maintenance buildings (17 January 1991 through 10 March 1991).

In coordination with the 352d Civil Affairs Command, the ENCOM organized and deployed DASTs to Kuwait for initial assessment of the damages incurred as a result of the Iraqi occupation. There were nine DAST teams deployed with the mission of assessing the damage to power plants, water–production systems, food–storage facilities, sanitary systems, transportation networks and telecommunications systems. As an additional responsibility, the DAST teams were to assist the Kuwait Emer-

gency Restoration Office in its mission to support the reestablishment of critical facilities in Kuwait. The ENCOM searched through its subordinate units to locate engineers who had performed similar work in their civilian occupations. Numerous volunteers were recruited for this vital mission.

Missions Not Performed

Because of the abundance of excellent seaports and airports in Saudi Arabia, the long lead time available prior to the offensive operation and the successful prosecution of the war, the necessity for rapid runway repair, major port construction and rear-area damage repair never materialized. The allied forces did not experience this type of war damage, but engineer forces were always ready to make necessary repairs. In some instances, this necessitated having engineer personnel stationed at various road and airport locations, thinning the ranks of engineer troops available for other missions. The absence of these requirements, however, should not allow military planners to infer that these types of missions will not be needed in future conflicts.

In any theater where there is the deployment of a large force, engineer requirements will inevitably exceed capabilities. The Gulf War showed that the effective organization and management of engineer resources in the COMMZ is essential to the successful deployment of combat forces. The numerous engineer roles performed by the ENCOM in support of the war included host nation interface, liaison and support to Headquarters US Army Corps of Engineer contracting agent, command and control for subordinate engineer units, active support to the deployed corps engineer units, coordination and management of resources for the US services and construction supervision and inspection for projects in the COMMZ.

In coordination with the 352d Civil Affairs Command, the ENCOM organized and deployed DASTs to Kuwait ... with the mission of assessing the damage to power plants, water-production systems, food-storage facilities, sanitary systems, transportation networks and telecommunications systems.

Based on the lessons learned during the Gulf War, it is apparent that the Total Force integration concept does work and is vital to ensure success. The 416th ENCOM, as a Reserve unit with the mission of theater engineer support to the COMMZ, successfully performed its responsibilities as a fully integrated force (US Army Reserve, National Guard and Active forces)—an unbeatable team—during this operation.

The number of units deployed and the large number of EAC engineer requirements during *Desert Shield* and *Desert Storm* validated the original war planning. A theater of this type needs an ENCOM to manage scarce engineer resources and to ensure that a coordinated effort is focused on providing the right engineer effort at the right time and place. ***MR***

NOTES

1. Middle East/Africa Projects Office-Southwest Asia has been reorganized and is now called the Trans Atlantic Division, US Army Corps of Engineers.
2. These numbers represent only the Engineer Command Class IV materials' procurement and management, which were in addition to what the Regional Contingency Construction Management cell, located within US Central Command, procured using host nation and government of Japan assistance monies.

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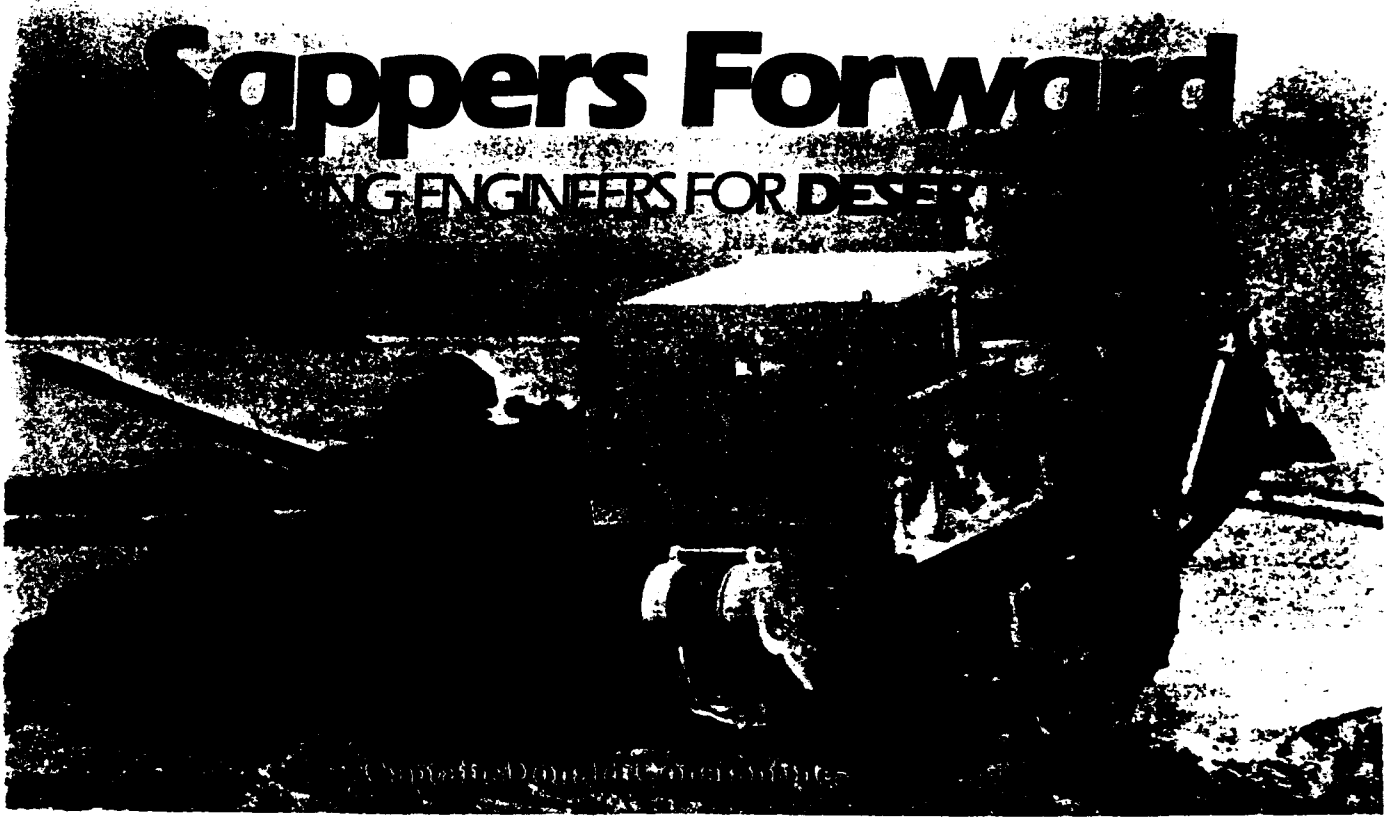
Sappers Forward

...NG ENGINEERS FOR DESERT...



Operations* Desert Shield *and* Desert Storm *ended one year ago with a clear military victory. The author reviews the Iraqi forces' invasion of Kuwait and their subsequent construction of an obstacle system that had to be breached by coalition forces. He describes the efforts of the Engineer School in its support of these operations. Finally, he takes a look at new equipment fielded during this period and the in-country training conducted prior to the beginning of the ground war.

DURING the Persian Gulf War, the United States and coalition forces achieved a victory so decisive and overwhelming that it will stand as a measure of success for future wars. To accomplish this, a multinational, combined arms force was mustered, the likes of which the world has not experienced in nearly half a century. Throughout the crisis, engineers played a key role, from the initial deployment for Operation *Desert Shield* through the 96-hour ground assault into Kuwait and Iraq during Operation *Desert Storm*. This article highlights the coalescence of engineer training, doctrine and equipment fielding and the contribution of the Engineer Center to the overall success of the operation.

The observer/controllers at the [NTC, CMTC and JRTC] had been working with units to solve a problem they were experiencing—being stopped by obstacles and unable to get by them without taking severe losses. The OCs felt that the breaching doctrine being developed was valid and would work if units trained to standard on all aspects of the operation.

Background. In the early morning hours of 2 August 1990, Iraqi troops launched an attack across the international border of Kuwait in an unprovoked act of aggression against the small sovereign nation. The two-pronged attack consisted of one armored division in the west and two divisions (armored and mechanized infantry) in the east, supported by airmobile assaults

on key objectives in the capital, Kuwait City. In less than 5 hours, Iraqi forces seized their objectives and began consolidation operations. Within the first two weeks after the invasion, the Iraqis reinforced their hold on Kuwait by bringing in additional armored, mechanized and infantry divisions and by developing a comprehensive defensive obstacle plan. This obstacle plan began by emplacing the first obstacle complex in southeastern Kuwait paralleling the Saudi Arabian border. As time progressed, the Iraqis continued the development of this obstacle belt until it crossed over the western border of Kuwait and extended well into Iraq.

Eventually, this obstacle belt, often hundreds of meters in depth, consisted of multiple minefields, berms, antitank ditches, wire obstacles, water-filled pits and, of course, the infamous "fire trenches." These fire trenches were ditches filled with the abundantly available crude oil that was to be ignited in the face of a coalition attack. Along the coast, the Iraqis emplaced mines (on the beach, as well as under water), wire obstacles and sharpened iron tetrahedrons. They were even rumored to have emplaced electrical lines in the surf to electrocute an amphibious landing force. The few paved roads that could offer a high-speed avenue of approach from Saudi Arabia were blocked with craters, ditches, piles of sand, barrels, wrecked vehicles and any other debris that could serve as an obstacle. As each day passed, the Iraqi obstacle plan became more complex, inventive and threatening to an impending coalition attack. The primary obstacle complex was estimated to be over 400 kilometers long.

A significant factor in the Iraqi obstacle development was the abundance of mines owned and employed by the Iraqis. After fighting an eight-year war with Iran, most of which was defensively oriented, the Iraqis had developed considerable experience in obstacle preparation and had accumulated an extremely large inventory of the world's land mines. These mines were purchased with Iraqi "petrodollars" and came from a multitude of countries, both from the free world and the Warsaw Pact. These inventories were augmented with additional mines captured during the occupation of Kuwait. Conservative estimates indicated that the Iraqis may have emplaced in excess of 2.4 million mines (600,000 antitank and 1.8 million antipersonnel) in the primary obstacle belt alone. This did not include the many point or protective minefields in the Kuwaiti Theater of Operation (KTO), or the integrated strongpoints constructed forward of the main line of defense. It became immediately obvious to the coalition forces that success would be based on their ability to breach these obstacle complexes without hindering mobility.

The Iraqis may have emplaced in excess of [600,000 antitank and 1.8 million antipersonnel] mines in the primary obstacle belt alone. This did not include the many point or protective minefields . . . or the integrated strongpoints constructed forward of the main line of defense. It became immediately obvious . . . that success would be based on their ability to breach these obstacle complexes without hindering mobility.

Doctrine. As the Iraqi army was preparing to cross the Kuwait border, the US Army Engineer School, Fort Leonard Wood, Missouri, was finalizing the last coordinating draft of a new field manual, US Army Field Manual (FM)

Units receiving the ACE for the first time immediately began conducting new equipment training in country. One unit . . . the 24th ID(M), received its last M9s just three days before they attacked into Iraq. The ACE was effective in breaching tank ditches and berms along the border and in constructing combat roads and trails. It was especially successful in keeping up with the maneuver forces as they penetrated deep within Iraq.

90–13–1, *Combined Arms Breaching Operations*. Prior to the development of this manual, combined arms breaching was poorly thought–out and inadequately addressed in con. .ned arms field manuals. Although the Engineer School was still incorporating comments and making corrections to the final coordinating draft, copies were distributed on a limited basis to units preparing to train at the combat training centers, as well as to Marine Corps units training at home stations.

The observer/controllers (OCs) at the National Training Center (NTC), Fort Irwin, California, Combat Maneuver Training Center (CMTC), Hohenfels, Germany, and Joint Readiness Training Center (JRTC), Little Rock Air Force Base and Fort Chaffee, Arkansas, had been working with units to solve a problem they were experiencing—being stopped by obstacles and unable to get by them without taking severe losses. The OCs felt that the breaching doctrine being developed was valid and would work if units trained to standard on all aspects of the operation. The NTC took the lead in this area by building a series of Iraqi–style obstacles and fighting positions. The 177th Armored Brigade attacked these systems, validating the new doctrine and developing the tactics, techniques and procedures required to successfully breach the obstacle complexs placed along the Kuwaiti and Iraqi borders with Saudi Arabia. A film of these techniques was made and sent to all units deploying to Saudi Arabia.

Predeployment Training. When the XVIII Airborne Corps was alerted and started deploying to Saudi Arabia, the Engineer School contacted the commander of the 20th Engineer Brigade (Airborne) and offered its assistance in the predeployment training of his units. The commander requested that the school provide mobile training teams (MTTs) to enhance leadership skills in all deploying engineer units. The school responded by developing MTTs consisting of subject matter experts in each of the five engineer battlefield mission areas: mobility, countermobility, survivability, sustainment and topographic engineering. During the period September to December 1990, the MTTs trained in excess of 25 engineer units throughout the United States and Europe. Specific subjects included engineer offensive and defensive operations, breaching, obstacle tactics, demoli-

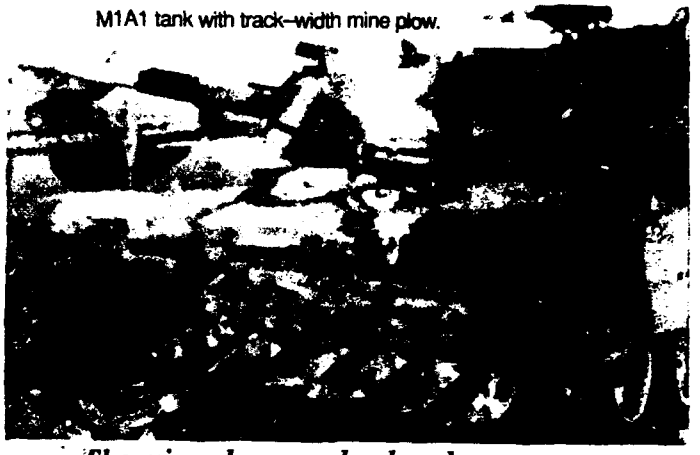
tions, mine warfare, reconnaissance, desert construction and airfield damage repair.

Training Shortfalls. During the school's MTT visits to deploying units, numerous training and preparadeness shortfalls were identified. One area that was identified as being especially poor was mine warfare. Problems existed in both the familiarity with and employment of US mines, as well as the identification and neutralization procedures for threat mines. The problem was attributed, at least in part, to the lack of live-mine training. In response to this weakness, the Engineer School developed programs for units conducting live-mine training. Additionally, with the assistance of the US Army Foreign Science and Technology Center, the school published the *Mine Recognition and Warfare Handbook*. The book contains information on how the US and Iraqi armies employ mines and how the US forces should neutralize Iraqi mines. The handbook also contains color pictures of 97 different mines in the Iraqi inventory.

Another major shortfall related to the construction of survivability positions in a desert environment. This shortfall was dramatically emphasized when a survivability position collapsed in Saudi Arabia, killing two US soldiers. Responding immediately to the accident and obvious training weaknesses, the Engineer School published a graphic training aid (GTA) on *survivability*. The GTA was designed for use by both engineer and nonengineer supervisors in planning, supervising and inspecting survivability positions.

Equipment. Much of the engineers' success in *Desert Shield* and *Desert Storm* can be attributed to the performance of new engineer equipment fielded prior to and during *Desert Shield*. One example is the M9 ACE (armored combat earthmover). Prior to *Desert Shield*, the Army had completed the 1990 purchase of the ACE and had just begun fielding it in limited quantities. From December 1990 to January 1991, 100 M9s were shipped to Saudi Arabia. Units receiving the ACE for the first time immediately began conducting new equipment training in country. One unit, the 1st Infantry Division (Mechanized), (1st ID[M]), received its M9s one week prior to deploying from the United States, while another unit, the 24th ID(M), received its last M9s just three days before they attacked into Iraq. The ACE was effective in breaching tank ditches and berms along the border and in constructing combat roads and trails. It was especially successful in keeping up with the maneuver forces as they penetrated deep (more than 500 kilometers) within Iraq. The versatility and capabilities of the ACE were limited only by the inexperience of the operators, which is to be expected when new equipment is fielded in such a short time.

M1A1 tank with track-width mine plow.



The mine plow was developed as a component of the battalion countermine set, which consists of 12 mine plows, four mine rollers, four CLAMS (clear lane marking system) and the necessary vehicles to transport the set.... The plow was popular because it did not hinder the mobility of the M1.

As the Iraqi obstacle system grew in size and complexity, our leaders began to fully comprehend the magnitude of the challenge they were facing. Fortunately, the Army had recently fielded several effective countermine systems. One such system was the M1 tank-mounted track-width mine plow. The mine plow was developed as a component of the battalion countermine set, which consists of 12 mine plows, four mine

The full–width mine rake, whether mounted on the CEV or the M60, proved to be extremely valuable during the breach. When a mine rake detonated a mine, the damage was normally minor and did not hinder the vehicle's operation.... One mine rake... detonated at least seven mines and was still usable, and no soldiers were injured as a result of the explosions.

rollers, four CLAMS (clear lane marking system) and the necessary vehicles to transport the set. Field commanders indicated that they were pleased with the performance of the mine plow, but lacked confidence in the mine roller. The plow was popular because it did not hinder the mobility of the M1. However, the roller was thought to be too heavy, often getting stuck in the soft sand, and the maneuver commanders felt it slowed their speed and limited their mobility. As a result, the rollers were not used during the assault. The CLAMS worked, but the markers were difficult to see due to dust and smoke generated during the breach. Most units depended on large panels to mark the lane entrances and used posts with chemical lights to mark the limits of the lane.

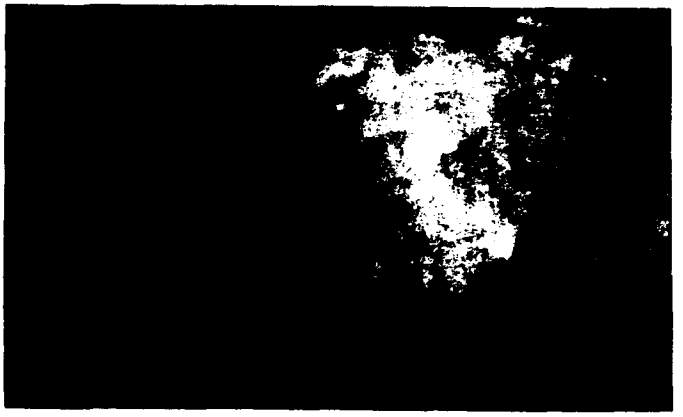
Even with the fielding of the battalion countermine set, there was still a need for additional countermine capability. One of the war's greatest equipment success stories was the development and fielding of the full–width mine rake. Over 50 mine rakes were produced, flown to Saudi Arabia, fielded to our ground forces and used during the breach of the Iraqi defenses. The full–width mine rake could be mounted on the M728 CEV (combat engineer vehicle) and the M60 series blade tank that was used by US Marines and Egyptian ground forces. The full–width mine rake, whether mounted on the CEV or the M60, proved to be extremely valuable during the breach. When a mine rake detonated a mine, the damage was normally minor and did not hinder the vehicle's operation. It was reported in the Egyptian sector that one mine rake detonated at least seven mines and was still usable, and no soldiers were injured as a result of the explosions.

An existing system that received a lot of attention during our counterobstacle training in preparation for the ground war was the rocket–projected mine clearing line charge (MICLIC). The MICLIC is a relatively old system that was first developed by the US Marine Corps and later adopted for use by the Army. Although there were a sufficient number of them in the theater, our forces had little or no experience employing them because of peacetime training safety constraints. Only a small percentage of our combat engineers had actually fired the rocket with the training (inert) line charge, and none of them had detonated a live line charge; therefore, the confidence level was very low. In the 30 days prior to the ground war, one of our divisions fired over 65 line charges in training. US forces also trained and equipped the Egyptian and Saudi forces with MICLICs. One problem encountered with the MICLIC was its lack of mobility. The system, normally mounted on a 1 1/2–ton trailer, was not suitable for high–speed mobility in the desert. Necessity being the mother of invention, units developed innovative ways of mounting the MICLIC. The Marines mounted three MICLICs on their amphibious assault vehicle (AAV), which gave the system increased mobility and provided some armor protection. This system, known as the three–shot line charge, proved very effective against conventional land mines and was used 68 times by one Marine division during the assault. In a similar

effort to enhance the mobility and survivability of the MICLIC, units in the field developed the armored vehicle launched MICLIC (AVLM), which consisted of two MICLICs mounted on the chassis of an armored vehicle launched bridge (AVLB). Two-thirds of the AVLBs in the Army's breaching force were converted to AVLMs for the ground assault.

In-Country Training. As previously implied, much of the success of ground forces can be attributed to the intense training units underwent after arriving in Saudi Arabia. In addition to the new equipment, training on systems such as the ACE and live training with mines and MICLICs, units were intensely trained in combined arms operations. Although the stage was different, training was conducted exactly like it was done at home station. Colonel Hank Miller, commander of the 36th Engineer Group, indicated that "units went straight through the mission essential task list (METL) and battle task analysis process. Training was based on the METL and battle task analysis. It was done in a combined arms mode and within a brigade context." In every division's area, engineers built full-scale replicas of the Iraqi obstacle system for training. Colonel Robert J. Greenwalt Jr., regimental engineer for the 1st ID(M), explained, "We built an obstacle that was 5 kilometers wide and 1.2 kilometers deep. It was a composite from intelligence of what the Iraqis had been putting in the Kuwait sector." Units conducted extensive combined arms breach training, using these models and "following the manual (FM 90-13-1)," Greenwalt emphasized. Units also practiced deliberate and hasty attacks at brigade and task force levels, in-stride breaches and passage of lines with other units. The success of the in-country training can be credited to sound training and tactical doctrine, realistic conditions, clear command intent and combined arms cooperation at all levels.

Engineers were successful throughout *Desert Shield* and *Desert Storm*, but their success can only be measured when the engineer is looked at as a key member of the combined arms team. From the divisional engineer, who provided a vanguard along the Iraqi border from August 1990 until the conflict was over, to the individuals in the Engineer School supporting the effort with MTTs, publications and new equipment, engineers worked together to overcome all obstacles. Our effort validated the need to train as we fight—in a combined arms context, under realistic battlefield conditions. Leaders at every level must fully understand the METL and battle task analysis process and must be involved in the training. Units should strive to conduct live-mine, demolition and MICLIC training at every opportunity. Last, leaders must be cognizant of the real strength of our team, which is not our equipment, training or doctrine, but our most important resource—our soldiers. ***MR***



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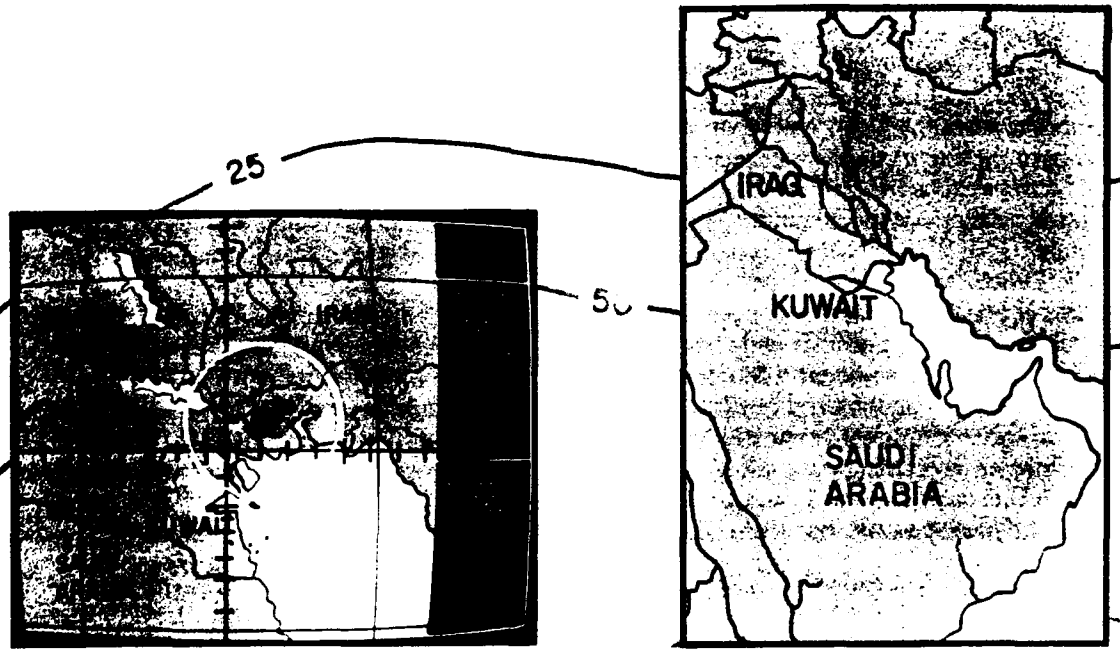
The Topographic Challenge

OF DESERT SHIELD AND DESERT STORM

Major Edward J. Wright, US Army

This article describes the challenges faced by the topographic engineers during operations* Desert Shield *and* Desert Storm. *The author describes the actions taken to provide the required products and support for the deployed and deploying forces. He discusses the technology used to produce updated maps for the theater of operations. Finally, the author provides some thoughts for future requirements of Army topographic engineering.



THE WAR in the Middle East presented a unique challenge to Army topographic engineers. The crisis developed quickly in an area of the world that was not well mapped and required the topographic engineers to use innovative techniques and technology to produce topographic products that gave army, corps and division commanders the information they needed to plan and execute the war.

During the past 15 years, Army topographic doctrine, equipment and training have followed the Army's emphasis on operations in the high–threat, high–intensity theaters of Europe and Korea. In topography, the emphasis has been to develop capabilities to exploit existing standard maps and data bases produced by the Defense Mapping Agency (DMA). All of these standard products and data bases are available for the entire European Theater, Korean Theater, and all Continental United States training areas. As a result, topographic engineer units at all levels have been able to routinely produce detailed, accurate products to support exercises and operation plans (OPLANs).

The situation at the beginning of Operation *Desert Shield* was quite different. The first task for the 30th Engineer Battalion was to assess the availability of products covering the *Desert Shield* area. The assessment revealed that there were some existing 1:50,000 scale maps of Kuwait and eastern Saudi Arabia, but not complete coverage. There were virtually no PTADBs (planning terrain analysis data bases) of the area, although there were existing 1:250,000 scale TTADBs (tactical terrain analysis data bases). The PTADBs were used to produce products to support Exercise *INTERNAL LOOK*, but were found to be inaccurate and incomplete and were abandoned.

The mission was to provide topographic support to the deployment to and defense of Saudi Arabia, without having access to the standard products and data bases. There were challenges in every area of topographic engineering:

- Surveyors were faced with vast areas, where there was little existing control.
- Terrain analysts had to produce analysis from imagery without terrain analysis data bases produced by DMA.
- Cartographers were expected to quickly produce accurate image maps of areas for which current maps did not exist.
- Lithographers were challenged with printing image–based products, requiring skills not needed since the 1970s.
- Map distributors faced the prospect of delivering millions of new maps to a corps and ultimately an entire theater army.

Image maps of key areas of Kuwait City . . . were the only up–to–date, accurate map products available [when] . . .the decision was announced to deploy elements of the XVII Airborne Corps to Saudi Arabia to defend against a possible Iraqi attack. . . . Available maps were issued from the Fort Bragg map depot to units before they deployed [and] maps were also being issued in theater from the DMA theater map depot in Bahrain.

The activities of the topographic engineers were tied very closely to the activities of the corps and divisions and later of US Third Army. When following the actions of the topographers, it is important to keep in mind the activities of the major maneuver units during the various stages of operations *Desert Shield* and *Desert Storm*.

The first topographic engineer actions started on the evening of 2 August 1990, when the XVIII Airborne Corps was conducting planning for a potential noncombatant evacuation order from Kuwait. Real–time intelligence imagery was received at the Fort Bragg, North Carolina, Image Readiness Facility (IRF). The 30th Engineer Battalion used its new personal computer (PC)–based Earth Resources Data Analysis System (ERDAS) to produce image maps of key areas of Kuwait City. These products, produced from real–time imagery within 18 hours of receipt, were the only up–to–date, accurate map products available to the XVIII Airborne Corps

at that time. Over the next several days, about a dozen image maps were produced of key areas in Kuwait and Saudi Arabia.

On 7 August 1990, the decision was announced to deploy elements of the XVII Airborne Corps to Saudi Arabia to defend against a possible Iraqi attack.

Map distribution was an early priority. Available maps were issued from the Fort Bragg map depot to units before they deployed. Within a few days, maps were also being issued in theater from the DMA theater map depot in Bahrain. This depot is stocked with those maps of the Middle East required to support US Central Command (USCENTCOM) OPLANs. The depot is not permanently manned. DMA deployed several personnel to open the depot almost immediately. The 30th Engineer Battalion also deployed eight map distribution personnel to work in the depot by 22 August. Other than a few planners on the corps staff, these were the first corps engineers deployed to the theater.

In a typical day, one or two C–141s with 20 to 40 pallets of maps would arrive. . . . The theater depot would sort and process these maps into corps sets, which were usually ready the next day. . . . The topographic map distribution units were hampered by a lack of organic personnel and equipment, as the engineer TOEs had been drawn down in anticipation of the Quartermaster Corps taking responsibility for map distribution.

Elements of the survey platoon were the next topographic engineer soldiers to deploy. The mission was to establish survey control to be used by the corps and division artillery units in the defense of Saudi Arabia. The short time allowed and the large area required precluded the use of standard survey techniques. Fortunately, the 30th Engineer Battalion had acquired four survey quality Global Positioning System (GPS) receivers during 1989 and had some experience in their use. A survey team equipped with the GPS receivers was deployed with the XVIII Airborne Corps Artillery on 27 August. The Topographic Engineering Center (TEC) then called the US Army Engineer Topographic Laboratories, provided additional GPS receivers and additional training to a second team of surveyors who deployed in September.

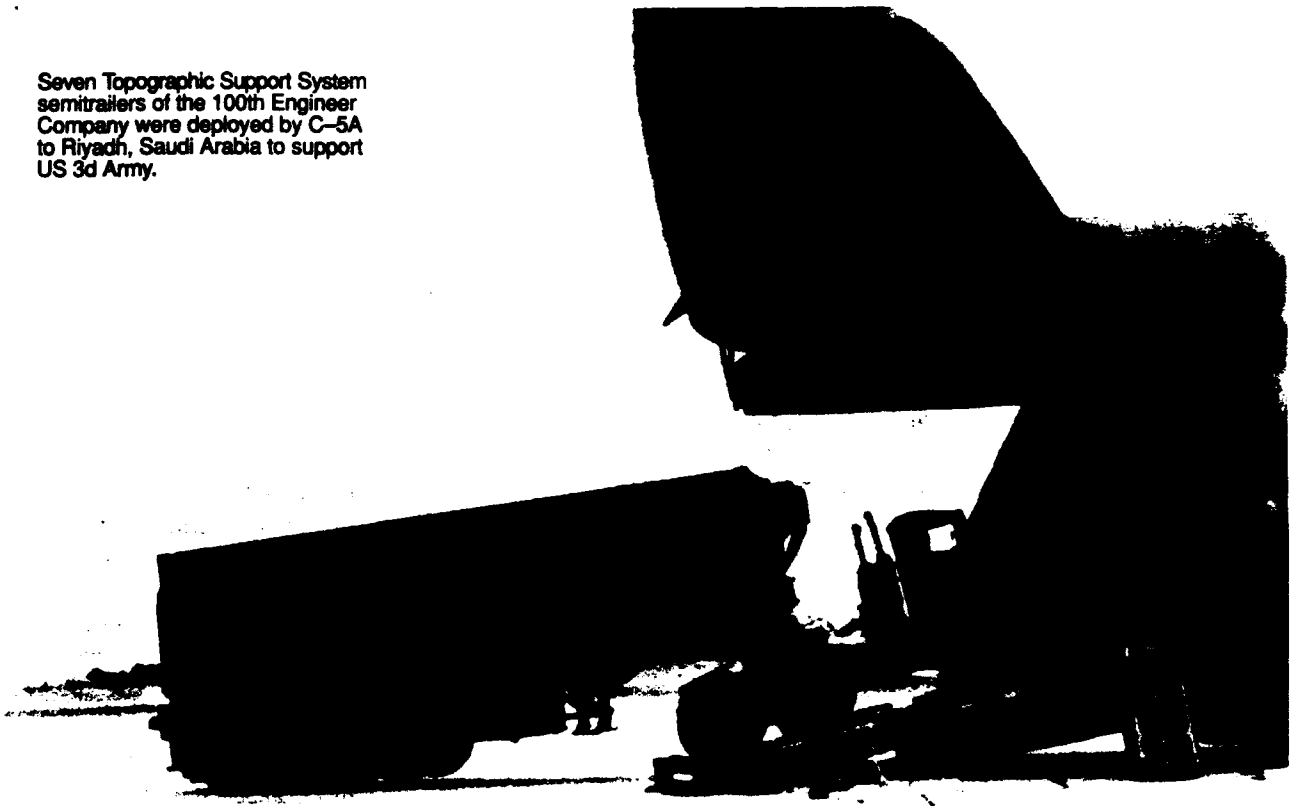
In Saudi Arabia, the surveyors were attached to the corps artillery and began a massive survey that, when finished, covered 10,000 square kilometers and established 95 survey control points, using the technique of relative GPS surveying. This entire network extended from one usable preexisting survey control point found at the Dhahran Airfield.

Early terrain analysis efforts focused on building a data base and on briefings for senior commanders and staff of the XVIII Airborne Corps. Terrain analysts poured over the existing maps and textual studies to get an idea of the types of terrain. Imagery from national sources and available Landsat imagery were also studied for clues about the terrain.

At the Fort Bragg IRF, intelligence analysts and terrain analysts worked together to track the progress of Iraqi obstacles being built in Kuwait. As the obstacles were imaged on the national imagery, they were plotted on an overlay to 1:50,000 scale maps. This overlay was reproduced weekly and forwarded to the theater, other commands that were preparing to deploy and to the US Army Engineer School.

In September 1990, the 175th Engineer Company (Topographic), was deployed to Saudi Arabia. The unit's equipment was transported by sea, with the personnel following several weeks later, in time to meet the equipment in Saudi Arabia. During the month and a half that it took the 175th Engineer Company to deploy and set up production in Saudi Arabia, the 100th Engineer Company (Topographic), provided direct support (DS) to the XVIII Airborne Corps.

At the same time, DMA was producing interim terrain data covering northeast Saudi Arabia. As this data became available, TEC transformed



Seven Topographic Support System semitrailers of the 100th Engineer Company were deployed by C–5A to Riyadh, Saudi Arabia to support US 3d Army.

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it into a format that could be used by the Digital Topographic Support System–Prototypes (DTSS–P) that the 30th Engineer Battalion had obtained from the 649th Engineer Battalion in Germany. On the DTSS–P, the data was plotted out in hard copy as a substitute TTADB and forwarded to the theater in enough copies for each terrain team.

The XVIII Airborne Corps planners were concentrating on the corps' defensive plan and trying to identify areas to station the corps' units. Problems with the existing maps were becoming evident. There was no complete coverage at the 1:50,000 scale, and there were inconsistencies between the map series covering Saudi Arabia and Kuwait. This situation led the XVIII Airborne Corps to request a series of image maps to be produced from Landsat imagery to cover the area of the corps' defensive plan.

Several things made this production possible. First was the experience previously gained at the 30th Engineer Battalion with the PC–based ERDAS system. Second, DMA had purchased Landsat data covering all of Kuwait, southern Iraq and northern Saudi Arabia. DMA rectified the data and made it available to any Department of Defense user on nine–track tape. And finally, the US Army Space Command lent additional PC–based ERDAS equipment and much needed technical assistance.

A series of 38 nonstandard size, 1:100,000 scale black and white image maps were produced during October. Use of these products was limited by the low resolution of the Landsat imagery and the decision to produce them as black and white products. However, they were the only series that provided complete coverage of the theater at the time.

Production of these products was still a technical challenge, requiring skill and expertise that

is no longer taught in the military occupational specialty schools for cartographers and lithographers. Completion of these image maps was the first large–scale, original mapping done by an Army topographic engineer unit since the 1950s.

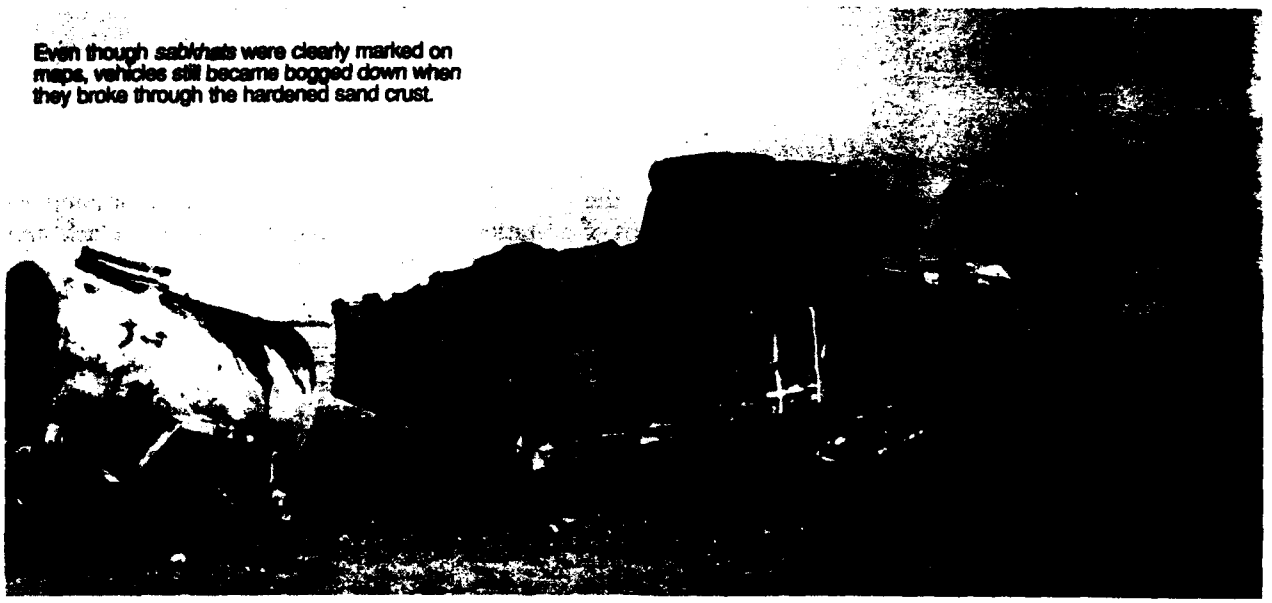
Even with the low resolution of Landsat, there were more terrain features shown on an image map than on the standard topographic line map of Kuwait. Intelligence imagery that showed an obstacle could be correlated to the image map . . . [which] was the most accurate of all the obstacle products being maintained by various organizations.

As the image maps were completed, the terrain analysts produced a terrain mobility product based on interpretation of the imagery and available maps. This information was overprinted onto the image maps to provide a mobility planning product. The Landsat image maps were also used as a base for the obstacle overlay still being maintained at the IRF. Even with the low resolution of Landsat, there were more terrain features shown on an image map than on the standard topographic line map of Kuwait. Intelligence imagery that showed an obstacle could be correlated to the image map by matching sand dunes and differences in soil tones. This obstacle map was the most accurate of all the obstacle products being maintained by various organizations.

Problems with existing maps led the Army to provide $600,000 to buy additional commercial off–the–shelf image mapping equipment for the 30th Engineer Battalion. The new equipment, to be delivered by 1 November 1990, consisted of two Sun Microsystems work stations, each with ERDAS software and a Linotronics filmwriter. These work stations, while functionally similar to the PC–based ERDAS systems, had a much greater capability. The Sun work station is a larger, more powerful computer than a PC, and the UNIX operating system provides the capability for the operator to have several operations going on at the same time. The ERDAS software for the Sun was almost exactly the same as the software already in use on the PC. The most important new capability was the Linotronics filmwriter. It is a high–resolution (2400 dots per inch) postscript laser filmwriter that produces halftone images to scale, ready to be made into a plate and printed. The Linotronics allowed the 30th Engineer Battalion to bypass the time–consuming and error–prone process of camera enlargement and halftone that was required with the PC–based ERDAS system.

By early November, President George Bush had directed the deployment of the US VII Corps from Germany and additional units to form a theater army. The additional forces provided an "offensive capability," and as a result, the planning now shifted to Kuwait and the southern part of Iraq. The impact of this shift in area of interest voided much of the topographic work that had been done to date. Data available for the new area was almost nonexistent. There were existing 1:250,000 scale DTED (digital terrain elevation data) and JOGs (joint operations graphics), but these products did not provide the detail needed for planning a potential offensive operation. DMA was given specific instructions on the areas and products to be produced. The first priority was 1:50,000 scale TLMs covering southern Iraq. These products were required no later than 15 January 1991. DMA mobilized all its resources and did an excellent job to meet this suspense. However, this effort required DMA to stop virtually all other production of maps and terrain data for the Army.

The surveyors of the 30th Engineer Battalion continued to extend the survey network that had been established. They also identified the requirement for some absolute control points to "tie down" the western end of the survey network. DMA had developed the capability to perform absolute positioning with some modified commercial receivers during the previous year. TEC, working with DMA, modified the software to work on a laptop PC; DMA loaned the GPS survey receivers; and TEC provided training on



Even though *sabkhats* were clearly marked on maps, vehicles still became bogged down when they broke through the hardened sand crust.

Intense discussion occurred over the feasibility of various operational and tactical plans. An important information requirement was a terrain analysis of southern Iraq, west of Kuwait. With the small–scale maps and limited imagery available, it was difficult for the terrain analyst to perform even an incomplete trafficability assessment.

the absolute positioning technique. This equipment, with the remaining surveyors, was deployed to the theater in early December with the remainder of the 30th Engineer Battalion.

Terrain analysis was being performed in theater by each of the division terrain teams, at the 175th Engineer Company, located with the XVIII Airborne Corps Headquarters at Dhahran, and with the 513th MI Brigade's terrain team, located with Third Army Headquarters in Riyadh. In all cases, the terrain teams were trying to answer questions about the terrain based on the meager data available to them. The only detailed, up–to–date information available was imagery. Unfortunately, the imagery available was of varying scales and did not provide complete coverage.

On 28 October, the contractor delivered the two Sun/ERDAS/Linotronics workstations to the 30th Engineer Battalion and began an intense one week of training on the systems. For the rest of November, a dedicated team consisting of the operators of the Sun/Linotronics work stations and one print squad, with a plate maker and one press, intensively practiced the production and printing of image maps, while the rest of the unit prepared for movement.

By mid–November, three vans from the 100th Engineer Company, still at Fort Bragg, were deployed by air to Riyadh to provide an additional terrain analysis capability to Third Army. The remainder of the equipment of the 100th Engineer Company was rail loaded for shipment to Wilmington, North Carolina, and then transloaded to ships to go by sea to Saudi Arabia. Four vans remained behind, two contained the two Sun/Linotronics work stations, the others contained a plate maker and a press. This equipment was to be deployed by air, via C–5A. The decision to deploy these vans by air provided additional time to train with the equipment at Fort Bragg before departure and provided the capability to produce image maps immediately on arrival in Saudi Arabia.

By mid–November, the 175th Engineer Company was operational in Saudi Arabia. It produced a wide range of cartographic products in addition to continual terrain analysis. Route maps, range overprints and obstacle overprints were all produced.

On 4 December, the main body of the 100th Engineer Company, and the headquarters and headquarters company of the 30th Engineer Battalion deployed to Riyadh, Saudi Arabia via

two C–5As carrying all the personnel and the four topographic support system (TSS) vans of the image mapping team. On arrival in Riyadh, the Sun/Linotronics work stations were immediately set up and began producing image maps for Third Army and XVIII Airborne Corps.

Also deploying with the 30th Engineer Battalion was an instructor from the US Army Military Academy, with the US Army Forces Command (FORSCOM) Automated Intelligence Support System (FAISS). The FAISS is a PC–based system for use by intelligence analysts. FORSCOM also developed a version of the FAISS for use by terrain analysts. This system, originally scheduled for fielding during 1991, was accelerated, and nine systems, one for each of the terrain teams in theater, were fielded in Saudi Arabia during December and early January 1991.

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To assist the terrain analysts in their interpretation of the intelligence imagery, black and white image maps were produced from Landsat imagery at a scale of 1:250,000. This scale matched the scale of the only existing maps, the 1:250,000 scale JOGs, and could be produced quickly enough to be available for planning. The black and white Landsat image was correlated to the tones visible on the much detailed national imagery. Interpretation of the detail from the national imagery provided information on trafficability. Correlation to the similar tones on the image map allowed the features seen on the intelligence imagery to be accurately plotted. Use of the Landsat image maps allowed a detailed, accurate trafficability study of the entire area of Iraq, south of the Euphrates River.

By the end of December, one of the Sun/ERDAS/Linotronics work stations had been provided to the 175th Engineer Company at Dhahran. The equipment was fielded with five fully trained soldiers.

Map distribution went through a short lull during this period. The 175th Engineer Company established the XVIII Airborne Corps map depot at Dhahran. The maps that existed had already been distributed, and the new ones being produced by DMA had not yet arrived. The only immediate challenge was to issue maps to the VII Corps units arriving from Europe and to try to plan for the arrival of 11 million maps in January.

VII Corps' topographic company, Alpha Company, 649th Engineer Battalion (A/649th), arrived with VII Corps in December. The first elements to arrive were the surveyors and the map distributors. Both elements fell in with their counterparts from the 175th Engineer Company until the rest of the company arrived.

By early January 1991, USCENTCOM had opened the Joint Imagery Production Complex (JIPC), at Riyadh Air Base. The JIPC, which worked for the USCENTCOM Intelligence, provided interpretation and reproduction of all imagery products coming into the theater. The 30th Engineer Battalion placed one van inside the JIPC where it had access to all available imagery. The battalion was then able to obtain

Surveyors from the 30th Engineer Battalion established precise positions using GPS survey receivers.

The surveyors were attached to the corps artillery and began a massive survey that, when finished, covered 10,000 square kilometers and established 95 survey control points, using the technique of relative GPS surveying. This entire network extended from one usable preexisting survey control point found at the Dhahran Airfield.

[When] VII Corps and XVIII Airborne Corps moved west to their tactical assembly areas, the surveyors went with them. The survey network was extended all the way to Rafhah, and then north in several places to the Iraqi border. . . . During the offensive, these survey teams extended their control network into Iraq.

copies of hard–copy imagery and forward them to corps and division terrain teams. The battalion could also obtain imagery and digitize it for use with the Sun/Linotronics work station at the 100th Engineer Company, or at the 175th Engineer Company, which by mid–January had relocated with XVIII Airborne Corps to Rafhah. The JIPC proved to be a valuable source of imagery for use by topographers.

In early January, the new 1:50,000 scale TLMs started to arrive at the Bahrain map depot. In a typical day, one or two C–141s with 20 to 40 pallets of maps would arrive at the depot. The theater depot would sort and process these maps into corps sets, which were usually ready the next day. Transportation assets moved the maps to the corps' map depot, originally in Dhahran, but later moved to King Kahlid Military City. At the corps depot, the maps were again broken down, this time into divisional sets. The divisions were responsible for picking up their own maps and doing the distribution within the division. The topographic map distribution units were hampered by a lack of organic personnel and equipment, as the engineer TOEs (table of organization and equipment) had been drawn down in anticipation of the Quartermaster Corps taking responsibility for map distribution.

As VII Corps and XVIII Airborne Corps moved west to their tactical assembly areas, the surveyors went with them. The survey network was extended all the way to Rafhah, and then north in several places to the Iraqi border. Before the ground war began, the GPS assets of the 30th Engineer Battalion were cross–leveled, so that each corps would have a GPS survey team in support. The surveyors developed and practiced quicker surveying techniques which, while not quite as accurate as their usual standards, were hoped to be fast enough to keep up with the ground attack. During the offensive, these survey teams extended their control network into Iraq, with elements of the corps artillery.

Terrain analysis became more and more detailed as the plans were refined. As before, the terrain analysts depended on imagery. Soon after the start of the air war there was an important additional source of imagery, the U–2 aircraft. The U–2 flew an almost daily mission that covered all of southern Iraq with high–resolution stereo panoramic photography. For the first time, the terrain analysts had complete detailed coverage

of their areas. Exploitation of this imagery was initially hampered by the lack of training and experience with panoramic photography, but this was quickly overcome.

The XVIII Airborne Corps intelligence architecture provided digital communication between Fort Bragg and the deployed corps headquarters. By this route, the IRF at Fort Bragg transmitted digital images in a format called secondary imagery dissemination to the XVIII Corps and the 175th Engineer Company. These images become so numerous that a simple data base was built using the FAISS that allowed the topographers and intelligence analysts to keep track of images they had on hand. The images could then be quickly searched and incorporated into topographic products produced at the 175th Engineer Company.

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Cartographers continued to produce image maps from Landsat, SPOT and national imagery obtained at the JIPC. An important series of image maps were produced covering the "breach areas" where VII Corps was to breach the Iraqi defense west of the Wadi al Batin. These image maps were produced at a scale of 1:12,500. At this scale, most of the Iraqi positions and obstacles could be seen on the image map. To ensure correct interpretation, the image maps were overprinted with intelligence data provided by the intelligence analysts at the JIPC. These products proved invaluable to the soldiers planning and conducting the breach. Other image maps were produced covering all of the XVIII Airborne Corps objective areas.

The intelligence and threat analysis center had been producing intelligence templates showing the positions of Iraqi units since the early days of *Desert Shield*. In January, a system was in place to transmit this information digitally to Third Army in Riyadh. The data, which contained Iraqi divisional templates for overlay on 1:50,000 scale maps, was sent via secure communications to the Third Army G2 (Intelligence). A floppy disk containing the file was hand carried to the 30th Engineer Battalion where it was plotted on acetate then overprinted on 1:50,000 maps. Over 400 copies of each were produced for distribution to corps, division and brigade commanders and staffs.

In January, TEC sent a Quick Response Multicolor Printer (QRMP)–Prototype to the 30th Engineer Battalion . This system, a commercial Cannon Bubble Jet copier, is capable of full color copying of an entire map. This system provided a much needed capability to quickly produce a few color copies of maps or maps with overlays.

The VII Corps topographic company also produced important products. Concern with the large number of 1:50,000 scale maps needed to cover the sector led the A/649th to reduce the 1:50,000 scale maps to 1:100,000 scale. At this scale, the area shown on four 1:50,000 scale maps can be shown on one map sheet. These maps were produced with an overprint showing every noteworthy feature that could be found on the U–2 photography of the area. These additional features assisted units in navigating across the nearly featureless terrain.

A product, produced by the 175th for the XVIII Airborne Corps attack, fused all of the new and old topographic technology of the war. The product appeared simple and was simple to use. It was a series of 1:50,000 scale maps along the main supply routes (MSRs). Overprinted on the maps were significant terrain features and locations of almost every enemy obstacle, bunker and vehicle. While the product appeared simple, considerable technology went into it. The terrain features and enemy objects had been identified on intelligence

Maintenance of the unique topographic equipment was also a challenge. Many of the items in the TSS were commercial equipment no longer made or supported by the manufacturer. Fortunately, the important items, the presses, were well maintained and ran well in spite of the harsh desert environment.

imagery, either national imagery or U–2 photography. The features had been transferred to Landsat image maps by correlation to similar image tones. The image maps were an accurate geographic reference, so the locations from the image maps could then be accurately transferred to the 1:50,000 maps. Finally, the product was printed in quantity on the reliable TSS lithographic press. As XVIII Airborne Corps units advanced up the MSR, they came to rely on this product, often engaging enemy positions with artillery, based solely on the mapped positions.

It is important to recognize that like every other engineer operation, topographic engineering depends on supplies and maintenance. The challenge for topographic engineers is to keep the production going, when the production uses very unique supplies, and the equipment is one of a kind. Even seemingly simple supplies like map paper were a problem. The supply problem was ultimately solved by a large contract with a Saudi Arabian office supply company that had organized commercial shipments of supplies from the United States and Europe.

Maintenance of the unique topographic equipment was also a challenge. Many of the items in the TSS were commercial equipment no longer made or supported by the manufacturer. Fortunately, the important items, the presses, were well maintained and ran well in spite of the harsh desert environment.

Much of the capability of the topographic engineers comes from nondevelopment items (NDIs) like PCs, the Sun/Linotronics work station, GPS survey receivers and the FAISS. Fortunately, the Sun/Linotronics work stations worked flawlessly throughout the deployment. Only minor problems occurred with the other NDI equipment.

It would not be appropriate to draw conclusions solely from *Desert Shield* and *Desert Storm*

The Army can no longer concentrate on only a few areas of the world. . . . DMA will not be able to produce and maintain complete map coverage of the entire world. . . . Topographic engineer units must be equipped and trained to quickly produce image maps . . . for areas where there are no maps, or map supplements in areas where existing maps are out of date. Terrain analysts must be trained to interpret all types of imagery to quickly build terrain analysis data bases.

on future requirements for Army topographers. The Army's evolving doctrine for AirLand Operations and lessons learned from *Desert Storm*, *Desert Shield*, Operation *Just Cause*, Grenada and other crises over the last 10 years do suggest some themes for the future.

The Army can no longer concentrate on only a few areas of the world. In the future, we must be prepared to go anywhere in the world on short notice. DMA will not be able to produce and maintain complete map coverage of the entire world. Therefore, Army topographic engineer units must be equipped and trained to quickly produce image maps, as map substitutes for areas where there are no maps, or map supplements in areas where existing maps are out of date. Terrain analysts must be trained to interpret all types of imagery to quickly build terrain analysis data bases.

As a future crisis develops, there will be requirements for topographic products covering the entire contingency area at scales of 1:50,000 or 1:100,000. There will also be requirements for detailed, large-scale products of the critical areas, like the breach areas in VII Corps. These products may be at scale of 1:12,500, 1:10,000, or even 1:5000.

Of the three active component topographic engineer battalions, only the 30th Engineer Battalion has the equipment needed to produce the range of topographic products that will be required to support contingencies in the future.

Any discussion of Army topographic engineer missions must keep in mind the DMA mission. Army topography cannot afford to duplicate the DMA mission, but must be prepared to complement DMA's capabilities. In a future crisis, the Army will look first to DMA products for up-to-date, large-area coverage. If these products are not available from DMA, Army units may produce image maps from recent Landsat or SPOT imagery. In any case, Army topographic units will produce the detailed, large-scale products from national imagery.

The likelihood of shortfalls in standard map products for potential contingencies also has implications for the training of maneuver units. Training exercises are now routinely conducted on military installations where a full range of topographic products is available and used. If Army units are to be effective in quickly developing contingencies, they must practice planning and conducting operations using "contingency products" like image maps produced by DMA or Army topographic engineer units.

From the intelligence and topographic point of view, *Desert Storm* was an imagery war. It has also been called the "technology war" and the "GPS war." The success of topographic engineers is a direct result of the ability to acquire and use available technology to exploit imagery and GPS. That ability to rapidly integrate the available technology depends on soldiers trained in all the fundamentals of their trade. ***MR***

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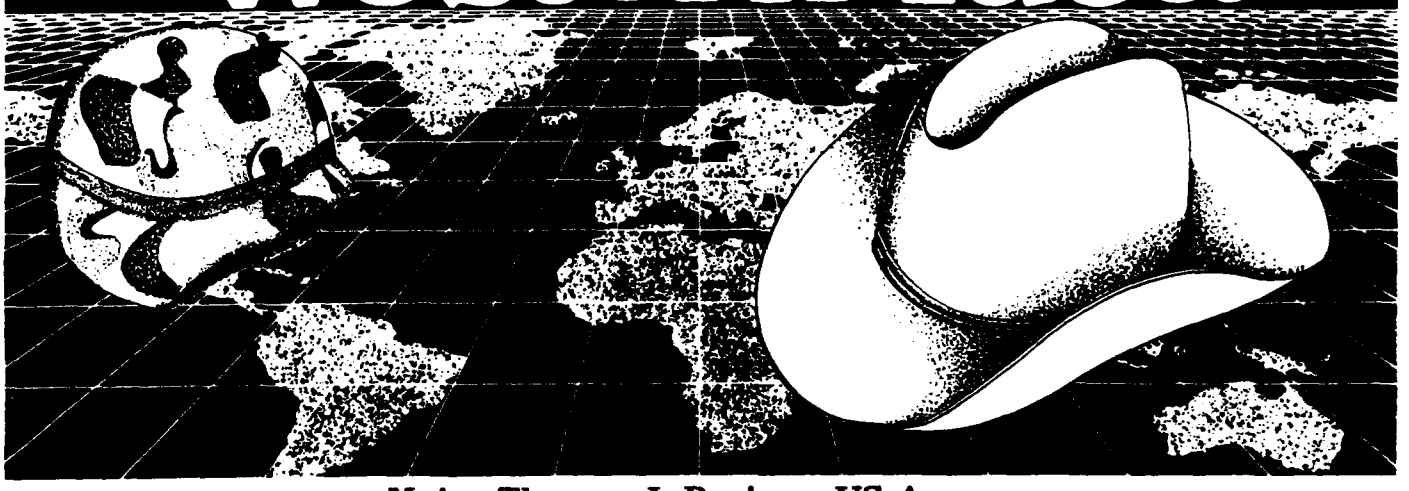
The American Military and the Western Idea



Major Thomas J. Begines, US Army

The author examines three spheres of responsibility that require careful consideration by military leaders. He considers the warfighting attitude of the American soldiers and what makes these soldiers fight. Next, he looks at the leaders' commitment to demand realistic, challenging training in order to win the next battles. Finally, the author looks at the military leaders' moral responsibilities to their soldiers.

AMERICAN military leaders have a wide array of responsibilities that, at times, may seem difficult to reconcile. They are expected to win wars, to secure America's place in the world arena and to fulfill their moral responsibilities to their soldiers, fellow officers and the American public. I am going to argue that the continued success of the United States and the continued global progress of the democratic way of life require that American military officers understand and strengthen the relationship between the three spheres of responsibility just mentioned. The unifying concept for all of this is something one might call "the Western idea."[1]

Consider first our warfighting attitude. In August 1990, in response to the Iraqi invasion of Kuwait, President George Bush ordered the deployment of US troops to the Persian Gulf. At that time, he spoke of having the opportunity to form a New World Order, an order unmarred by aggression between nations. He spoke also of "a defining moment" in history. For the US Armed Forces, the Gulf War was truly a defining moment. We went into combat with weapons, doctrine and personnel, largely untried by war, and emerged victorious with our equipment, our doctrine and the ability of our soldiers validated. But something else was validated—our warfighting attitude—and we need to be clear about just what that was and is. One national columnist

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Inprocessing Iraqi prisoners of war at Forward Operating Base Cobra, 27 February 1991.

Our ground troops were praised for their highly discriminate use of firepower and for taking additional risks to give Iraqi soldiers every chance to surrender without bloodshed, despite the provocation of the Iraqis' feigned surrenders at Khafji. . . . Targeteers and intelligence gatherers were [just] as exacting . . . so that we knew where to bomb and shell to destroy enemy soldiers, equipment and facilities, but not civilians.

wrote approvingly, but without full understanding, of "a new tradition" in the American way of war: "Our warriors are kinder and gentler."[2] Others noted Bush's explicit invocation of just war precepts to justify operations *Desert Shield* and *Desert Storm*.[3] Still others (rightfully) lauded our pilots for taking more risks than the conventions of war required, flying lower and straighter on bombing runs to reduce civilian casualties to the absolute minimum.[4]

Our ground troops were praised for their highly discriminate use of firepower and for taking additional risks to give Iraqi soldiers every chance to surrender without bloodshed, despite the provocation of the Iraqis' feigned surrenders at Khafji.[5] Our humane treatment of enemy prisoners of war also drew plaudits. Our targeteers and intelligence gatherers were as exacting and diligent as possible in their work, so that we knew where to bomb and shell to destroy enemy soldiers, equipment and facilities, but not civilians. But what if the battle had not gone well tactically or operationally? What if we had encountered resistance everywhere of the most savage kind, so savage that the battle for Kuwait hung in the balance? Would our soldiers and leaders have continued to fight with such scrupulous observance of the *jus in bello*? And should they, if it seems that a ruthless enemy is gaining the upper hand?

One school of thought, that of realism, argues that we need to be just as nasty in war as the enemy is. The realists contend that war is a Darwinian struggle for survival. The most vehement insist that it is ludicrous to attempt to interject notions of humaneness and mercy into such a struggle. The laws of war (say the realists) are simply artificial restraints that will, and should, be discarded under sufficient pressure on the battlefield. Indeed, the realists' credo is: *inter arma silent leges* (in war the laws are silent). There are still a number of nations, leaders and armed forces that embrace realism *in toto* or in part. I want to argue against realism for two reasons.

First, such an argument will expose and clarify what is right about the current dominant war-

fighting attitude in the US Armed Forces. And second, there are still those in American society, and even within the ranks of the Armed Forces, who do not fully understand why we followed the *jus in bello* so scrupulously in the recent conflict and, more important, why we should continue to do so whatever the enemy's conduct on future battlefields.

I will begin with an observation made by Michael Walzer in his book, *Just and Unjust Wars*. The realist believes that the goals sought and the tactics used during hostilities require no moral justification. But Walzer points out that even the confirmed realist must still furnish a purely instrumental justification. He must show that there were no good strategies available other than the military strategy actually pursued and that his "harsh treatment" of the enemy soldiers or populace was a military necessity or, at least, was militarily expedient.[6] But there is an even stronger prudential argument against realism; namely, "harsh tactics"—violations of the *jus in bello*—are often tactically counterproductive.

Consider this example: In May, 1945, the Muslim population of Sétif, Algeria, rioted, killing some 103 Europeans. General Duval, at the behest of the French *colon* government of Algeria, ruthlessly and indiscriminately punished the Muslim communities in and around Sétif, killing thousands, most of them innocent of any wrongdoing. After the massacres, while the *colons* were congratulating themselves on the success of the suppression, Duval told them in warning: "I have given you peace for [only] ten years."[7] Indeed, the nascent Algerian liberation movement seized upon the barbarity of the French response and awakened a largely politically dormant population. "Sétif!" became a rallying cry, and the insurgency began to gain thousands of recruits. On 1 November 1954, almost exactly 10 years to the month after Duval's prophetic warning, the Muslims began the Algerian War. Eight years later, after suffering 83,441 casualties, the French army withdrew in defeat from a newly independent Algeria.[8]

As a second example from recent history, consider our war in Vietnam. (And here I ask a rhetorical question perhaps best answered by those who fought in that conflict.) How often did our tactics in Vietnam—the sometimes indiscriminate use of massive firepower; the sometimes brutal treatment of enemy prisoners and "sympathizers"; the sometimes pervasive disrespect for the rights and dignity and desires of ordinary

A suspected Vietcong guerrilla under interrogation by a South Vietnamese officer.

Despite innumerable actions fought by US soldiers as decently as guerrilla war allows, the images that haunted the collective American psyche and drove us to abandon the war were . . . the Saigon chief of police, using a small pistol to execute a "Charlie"; a napalmed Vietnamese girl running naked down a tarmac road [and] . . . ditches filled with scores of bodies, clothes disheveled, faces contorted, women and children and old people; the inhabitants of My Lai.

All wars traumatize and brutalize individual soldiers to varying degrees. Many witness great brutality [and] . . . suffer psychologically when they do things, even under orders, that they feel to be deeply morally wrong or, more commonly, that they come to understand, in later years, were deeply wrong. Vietnam was the toughest kind of war to "fight cleanly."

Vietnamese—strengthen the enemy cause and forces? One recurring lesson of history is that harsh tactics during hostilities, unless those tactics are literally genocidal, are far more likely to increase and prolong a conflict than to end it. Indeed, just war theorists of the 16th and 17th centuries such as Francisco Suárez, Francisco de Vitoria, and Hugo Grotius often relied upon prudential arguments in their advocacy of moderation and humanity in warfare.[9] We ought not fight in such a way that we sow such bitterness among a population that true victory—a lasting peace—becomes impossible.

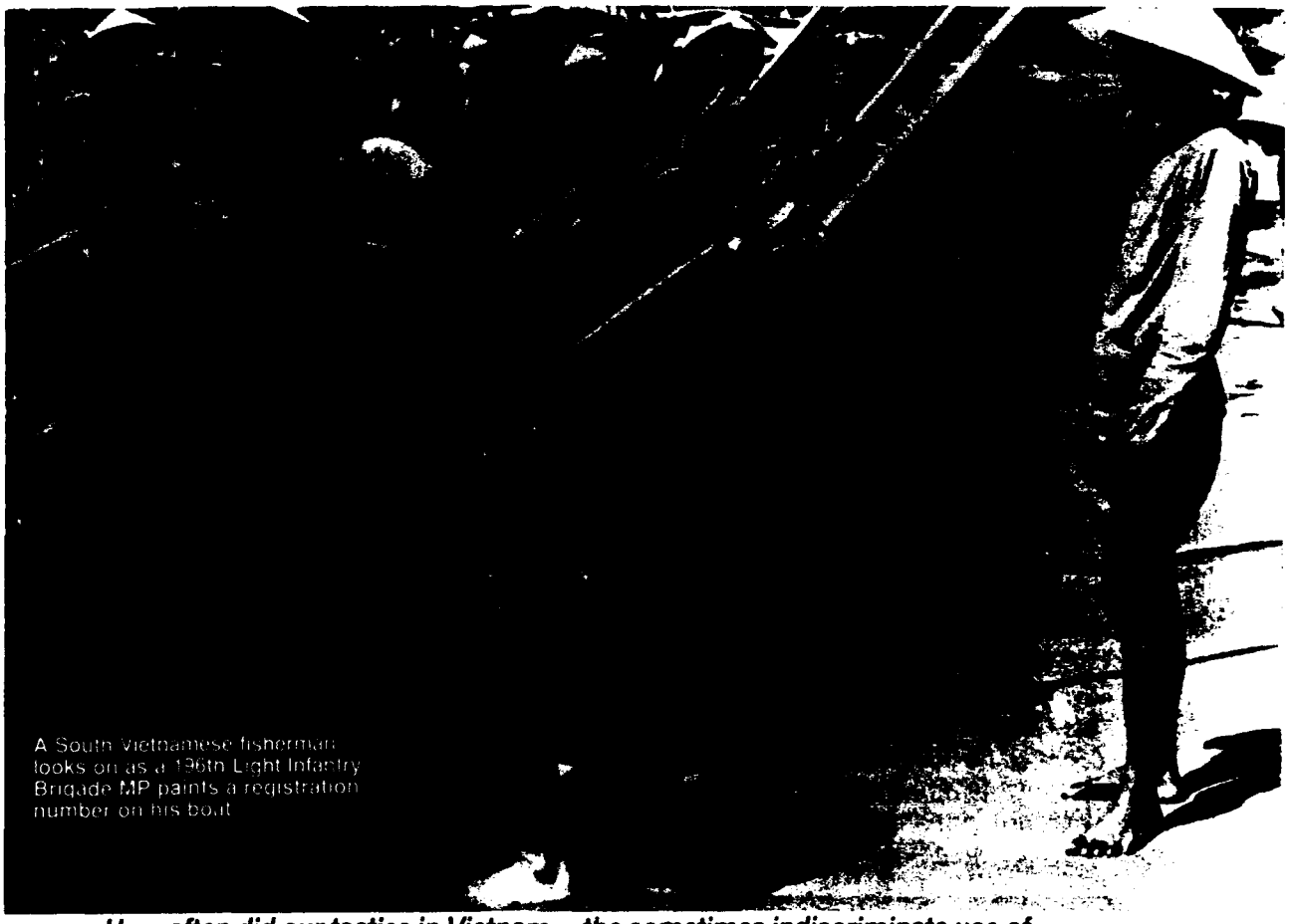
Every army has a moral character. During World War II, the Russians fought with tremendous stubbornness against the Nazis because they knew what to expect from them: brutal treatment. The Kurds and Shiites fought hard against Saddam Hussein's armies; and despite the current exodus, will undoubtedly fight hard in the future because they know what to expect from Saddam's soldiers: brutal treatment. And on future battlefields, enemy soldiers facing US forces may well not fight hard because they know, after Grenada, Panama, Kuwait and Iraq, what to expect from Americans: just treatment at all times; humane treatment whenever possible.[10]

It is not all that simple, of course. In war, especially in low-intensity conflict, the enemy sometimes deliberately uses an opponent's respect for the *jus in bello* against him. He protects his combat assets by moving them into residential areas, as the Iraqis did during the recent Gulf War, relying on the allies' demonstrated aversion to bombing civilian areas. The insurgent hides himself among the civilian population, as the Vietcong often did, deliberately blurring the combatant–noncombatant distinction, hoping either for immunity from attack or to provoke an indiscriminate attack.[11] The latter would gain, for the Vietcong, recruits from among the embittered survivors; unfortunately, we sometimes obliged. But the long-term military advantage lies in scrupulous observance of the *jus in bello*.

We need to discipline our soldiers and ourselves to resist the occasional temptation to bend or break the rules of war in an attempt to gain some immediate tactical advantage. Our warfighting attitude and conduct must be such that the enemy soldier trusts our sense of justice and humanity more than his own leaders' or more than the worth of continuing to struggle against us. Of course, coupled with our reputation for respecting the *jus in bello*, we must maintain an equally deserved reputation for military prowess and devastating weaponry.

Walzer's second argument against realism is a moral one. It rests on the contention that people, as ordinary, thinking, moral beings, simply demand moral justifications of military decisions and the resulting actions on the battlefield.[12] This, unfortunately, is not universally true. Authoritarian governments do not accept or condone moral protest from their people. Their "justifications" take the form of propaganda, repression of dissenting voices, censorship and deliberate deceit. But it is fair to say that the people of libertarian, democratic societies such as ours require that their military act as "the moral arm and voice of the people."[13] Thus, the US Armed Forces violate the *jus in bello* on peril of damage to the national will to prosecute the war.

In the struggle to maintain the national will to win, our continued, collective perception of ourselves as a moral people is all-important. Further, worldwide telecommunications and ubiquitous and constant media coverage of armed conflicts mean that our actions on the battlefield will be tried before the court of world opinion. The propaganda of "the other side" will attempt to exploit any real or perceived violation by us of the *jus in bello* and to portray us as morally callous.



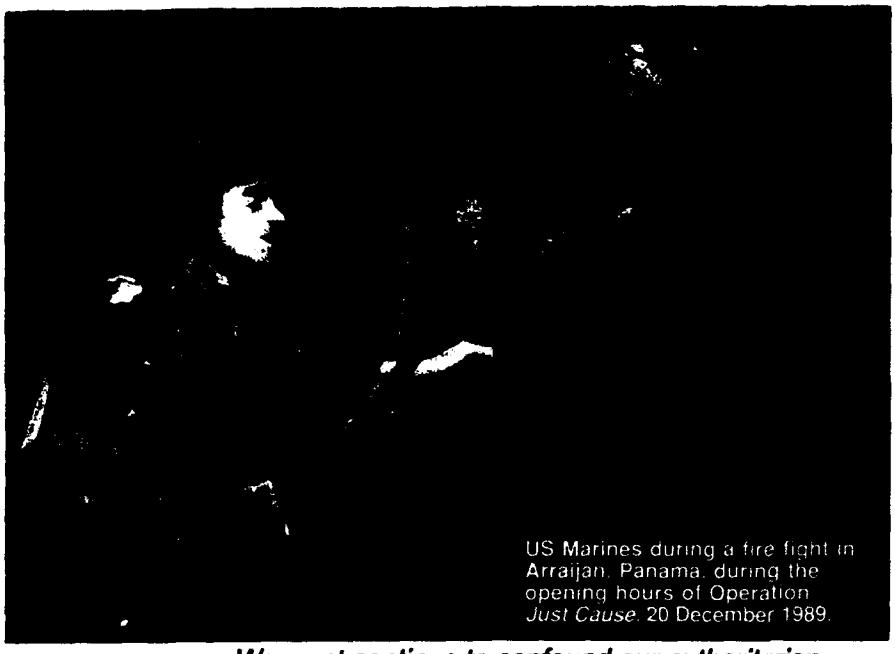
A South Vietnamese fisherman looks on as a 196th Light Infantry Brigade MP paints a registration number on his boat

How often did our tactics in Vietnam—the sometimes indiscriminate use of massive firepower; the sometimes brutal treatment of enemy prisoners and "sympathizers"; the sometimes pervasive disrespect for the rights and dignity and desires of ordinary Vietnamese—strengthen the enemy cause and forces?

Therefore, we must continue to build such a reputation for scrupulous battlefield conduct that the burden of proof for our supposed (or even real) lapses on the battlefield is always on the force or nation opposing us.

Consider this: We withdrew from Vietnam because the American people as a whole had lost the will to prosecute the war. There were many reasons for that loss of endorsement, but perhaps the most gnawing was the widespread belief that we had "lost the moral high ground," that it was immoral for us to continue fighting as we were fighting. Despite innumerable actions fought by US soldiers as decently as guerrilla war allows, the images that haunted the collective American psyche and drove us to abandon the war were these: a Vietnamese ally, the Saigon chief of police, using a small pistol to execute a "Charlie"; a napalmed Vietnamese girl running naked down a tarmac road, her village burning in the background from a US air strike; ditches filled with scores of bodies, clothes disheveled, faces contorted, women and children and old people; the inhabitants of My Lai, massacred by US soldiers. As an army, we lost faith in the importance or the feasibility of winning "hearts and minds," both Vietnamese and American.

I think that there is now widespread recognition within the leadership of the Armed Forces that we, in the military, must work hard to gain and maintain the nation's support. We ought not do things on the battlefield that will alienate our soldiers and the war effort from the American people. Our current warfighting attitude is the correct one, both for prudential and moral reasons. In the years ahead, especially in low-intensity conflicts, we must not allow ourselves or our soldiers to forget the importance of building a deserved reputation as hard, but honest, fighters.



US Marines during a fire fight in Arraijan, Panama, during the opening hours of Operation *Just Cause*, 20 December 1989.

We must continue to confound our authoritarian adversaries with the very real example of a fully integrated, fully pluralistic armed force that seems to be, largely because of its democratic makeup, an unbeatable force. . . . We must demonstrate our ability and resolve to defend the Western idea and, by our success, entice other peoples to embrace that idea as a way of life.

Further, it is crucial that our warfighting attitude continue to contribute to "the triumph of the Western idea," and that is the responsibility I want to discuss next.[14] One author has described the essence of the Western idea as maintaining respect for "the moral equality and autonomy of individuals" while seeking to improve the material conditions of our existence; this is one doctrine by which society can hope to attain "meaningful, fulfilling lives for all."[15] (Many other freedoms and commitments stem from those basic notions, of course, to include a commitment to a free-market economy.) In the summer of 1989, Francis Fukuyama published a seminal essay titled "The End of History" wherein he contends that liberal democracy—the Western idea—has won the ideological and material battle over all other political doctrines.[16]

After centuries of struggle and cataclysmic challenges from absolutism, fascism and Marxism, "the Western idea" has won global endorsement as mankind's end-state political philosophy. Many more years will pass, of course, before the remaining authoritarian states are swept away by the liberal, democratic spirit. In this regard, Fukuyama adds a sobering postscript. He warns that ethnic violence, nationalist sentiment and economic hardship in liberalizing states may force "a return to traditional Marxism-Leninism as a rallying point. . . . [Further] the fascist alternative is not yet played out."[17] Since Fukuyama issued his warning, other observers of the Soviet Union and former Eastern bloc nations have sounded increasing notes of alarm. The former Soviet Union, especially, is in danger; it is facing its worst crisis since the Great Patriotic War. Anatoly Sobchak, the mayor of St. Petersburg and a reformist politician, recently warned:

"There is increasing skepticism about the very feasibility of a democratic choice. People are beginning to wish for a strong hand. Whose hand is not important, as long as its strong."[18]

In addition to the still strong forces of Marxism, and the possibility of resurgent fascism, Islamic fundamentalism contributes to the bulwark of authoritarian states.

We, in the military forces of the democratic West, must do all that we can to continue to make libertarian democracy an attractive alternative to authoritarianism. Our Armed Forces, as an element of national power, should pursue a two-pronged approach to consummate the victory of the Western idea. First, since the Armed Forces are among the most visible and characteristic institutions of the United States, they must continue to embody the Western idea. That means that our Armed Forces must continue to have, and to manifest, a commitment to racial, ethnic, religious and gender equality. Our military forces must incorporate Americans from all societal layers and from all regions and walks of life—and every one a volunteer to fight for the Western idea. We must continue to confound our authoritarian adversaries with the very real

Worldwide telecommunications and ubiquitous and constant media coverage of armed conflicts mean that our actions on the battlefield will be tried before the court of world opinion. The propaganda of "the other side" will attempt to exploit any real or perceived violation by us of the jus in bello. . . . *We must continue to build such a reputation for scrupulous battlefield conduct that the burden of proof . . . is always on the force or nation opposing us.*

example of a fully integrated, fully pluralistic armed force that seems to be, largely because of its democratic makeup, an unbeatable force. We must ensure that each of our soldiers, airmen, Marines and sailors understands that he or she must exemplify in his or her conduct, especially when serving abroad and on the battlefield, a commitment to the values constituting the Western idea.

Second, and here I echo an earlier point, we must train hard to win, and we must win our next battles. We must demonstrate our ability and resolve to defend the Western idea and, by our success, entice other peoples to embrace that idea as a way of life and of government. In this effort, we must commit financial and intellectual resources to create, develop and arm ourselves with the best weapons and the finest technology on and above the planet. We must continue to show that individual initiative and creativity in a free-market economy make products, to include the engines and materiel of war, that are qualitatively superior to anything the captive citizens of controlled economies and authoritarian regimes can produce.

As a final related topic, consider the moral responsibilities of American military leaders. They have almost always recognized their responsibility to train our soldiers well in terms of teaching them tactical skills and preparing them for battle. We have understood the necessity for good leadership on the battlefield itself. But I want to discuss, now, our obligations to emphasize to our soldiers their ethical responsibilities on the battlefield. Perhaps the most important reason for this emphasis, the grounding of our obligation, is to promote the psychological and spiritual welfare of the soldier himself.

Two respected psychologists, one of them an Army officer who served in Vietnam, are among many who have observed that "for Vietnam-era veterans, delayed long-term [combat stress] effects appear to be higher than in previous wars."[19] The psychologists cite, as possible reasons for the disparity, the fact that soldiers were rotated from Vietnam as individuals, not as units, and thus lacked "closeness and emotional support [from other unit members] during that long trip home while working through the traumatic combat episodes."[20] Further, "the lack of

The soldier returning from Vietnam learned that the war was being fought on "the home front." . . . In Vietnam, the soldier could count on the loyalty and support of his fellow soldiers; on the home front, he fought alone. The soldier learned that his sacrifices and sufferings were misunderstood, unappreciated and even ridiculed by many Americans.

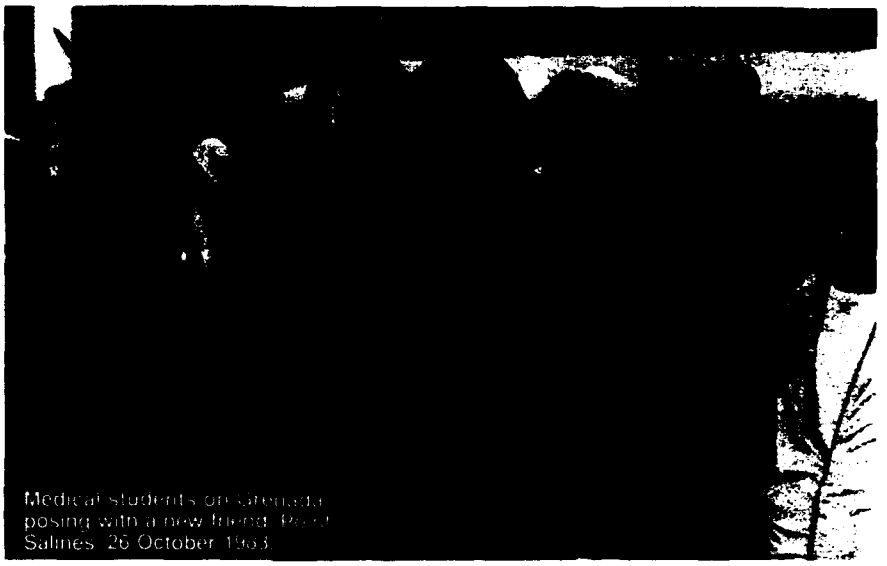
a heartfelt 'Welcome Home!' from the American public also made the working through more difficult."[21] The soldier returning from Vietnam learned that the war was being fought on "the home front," and on that front, unlike Vietnam, the battle lines were clearly drawn. In Vietnam, the soldier could count on the loyalty and support of his fellow soldiers; on the home front, he fought alone. The soldier learned that his sacrifices and sufferings were misunderstood, unappreciated and even ridiculed by many Americans. This was a sustained psychological attack that could be every bit as intense and debilitating as that on the battlefield in Vietnam. In our military, one response, a general one, was simply to reject the judgment of our own society, a society whose morality seemed increasingly alien to us, and to "do what had to be done" to win the war in Vietnam. The Army, especially the professional Army, turned in on itself and away from American society. Consider this description of the French army in Algeria in the 1840s; change the identities and the year, and it might well describe the US Army of the 1960s.

"[The] campaigns alienated the army from France. . . . The soldiers were perplexed when their hardships were ignored at home, annoyed when the purpose of their presence in Africa was questioned, and, ultimately, enraged when their methods of campaigning were condemned. . . . This feeling that it had been wronged and misrepresented forced the army in Africa to turn in on itself, to seek comfort in the fact that they were a band of brothers, professional military expatriates for whom France was increasingly a remote and incomprehensible land. . . . Among all but a few officers the feeling that disapproval in France was automatic removed any need to cater to metropolitan sensibilities."[22]

With the dangers of alienation fully in view, one of our moral responsibilities as military leaders is to nurture the support of our fellow citizens for the war effort. We do this best by fighting in a way that earns their moral approval. The war effort needs such approval, and just as important, our soldiers, for their mental well-being, need to fight and to return home in a climate of moral approval.

Second, all wars traumatize and brutalize individual soldiers to varying degrees. Many witness great brutality. Most suffer psychological stress, some even lasting psychological harm, from violence done to them or to their comrades. But many soldiers also suffer psychologically when they do things, even under orders, that they feel to be deeply morally wrong or, more commonly, that they come to understand, in later years, were deeply wrong. Vietnam was the toughest kind of war to "fight cleanly." Most of our soldiers and leaders did, but some, by accident, insufficient concern or deliberate decision, did not. They did things in "the 'Nam" that, unexpectedly, haunted them after they returned stateside—to "the [real] World." Hence, I believe there is another reason, a philosophical one, for the fact that relatively high numbers of Vietnam veterans suffered, or are suffering, psychological distress. The language describing that reason is not clinical, but it is all too human: "a troubled conscience."

As human beings, we cannot escape a constituting imperative "to live a life that would stand justified under moral and rational criticism."[23] As thinking, moral beings of whatever intellectual ability or education level, we are driven to integrate all of our significant decisions and life actions into a consistent whole.[24] In most cases, a soldier who violates the *jus in bello* on the battlefield—kills indiscriminately, mistreats prisoners, executes hostages, or simply witnesses or condones violations—will suffer psychological and spiritual doubt, disarray and even trauma, as he tries, successfully or not, to "put it all together,"



American soldiers fight for many reasons. They fight for the next hill, a town or city, an objective. They fight because their fellow soldiers are counting on them to fight. They fight because they are ordered to fight. But for most of our soldiers, what imbues all of those immediate motivations is an abiding faith that they . . . are in a struggle to secure and protect human rights and freedoms.

to make moral meaning of his life. We owe it to our soldiers not to require them to do things on the battlefield that violate their conception of themselves as morally decent beings.

American soldiers fight for many reasons. They fight for the next hill, a town or city, an objective. They fight because their fellow soldiers are counting on them to fight. They fight because they are ordered to fight. But for most of our soldiers, what imbues all of those immediate motivations is an abiding faith that they are fighting for the libertarian, democratic way of life. Our soldiers, as Americans, fight best when they believe they are in a struggle to secure and protect human rights and freedoms. The laws of war are likewise motivated by the desire to secure just and humane treatment of individuals. There is no essential conflict between the moral principles embodied in the laws of war and the majority of the moral values of our society. Indeed, after a lengthy examination in a recent work, Colonel Anthony E. Hartle has concluded (rightfully I think) that the moral principles underlying the laws of armed conflict "appear to be *fully compatible* [my emphasis] with the moral values of American culture."[25]

We cannot truly claim to be fighting to promote the fundamental moral values of the Western idea by violating the laws of war, laws which express many of those same values. We cannot be making the world safe for the innocent by deliberately or indiscriminately killing the innocent. Our soldiers recognize this basic contradiction. If we force them into moral contradiction on the battlefield, we destroy their sense of self–worth and their belief that they are fighting justly in a just cause. General H. Norman Schwarzkopf recently explained this crucial point, using a simple yet deeply persuasive metaphor. When asked by a reporter why the US forces in the Persian Gulf would continue to adhere to the *jus in bello* even if the Iraqis did not, Schwarzkopf offered as explanation this metaphor, one drawn from our frontier past. It touches deep roots in the American psyche: "Guys in black hats are allowed to shoot people in the back, hide behind rocks, all that sort of stuff. Guys in white hats don't do that."[26]

It is not a matter of convention; it is a matter of moral identity. American soldiers are "guys in white hats." They are not "hired guns." It is true that the American military is constrained in that it must do the bidding of political masters or leave the service. The politicians define the politico–geographical boundaries within which the military must work. The politicians limit the scope and the scale of the conflict. But American military officers are fully responsible for the *jus in bello*. It is they who decide how American soldiers are trained, how they will fight and how they will employ our powerful weapons. In that regard, our training must continue to incorporate a habitual respect for, and adherence to, the laws of war. Our operations orders and plans must make comprehensive provisions for the treatment of prisoners of war, the safeguarding of civilians and the reporting and prosecution of war crimes. The verbal instructions of commanders must stress the fact that we will, in all

cases, fight in a morally decent manner. We must continue and expand formal instruction in the laws of war. We must also add instruction at all levels on the importance of winning "hearts and minds," both at home and abroad—before, during and after future battles.

We are at a defining moment in history. There is a real possibility of establishing a New World Order, one which will grow progressively more just, more democratic and more humane with passing years. Perhaps the most significant contribution of American military leaders at this great ideological juncture in mankind's history is to ensure that the US Armed Forces continue to promote the Western idea. We have made a great deal of progress in the ideological and material battle against authoritarianism. More and more of the peoples of the world are embracing libertarian democracy as the path to a better life.

We cannot be making the world safe for the innocent by deliberately or indiscriminately killing the innocent. Our soldiers recognize this basic contradiction. . . . When asked by a reporter why the US forces in the Persian Gulf would continue to adhere to the jus in bello *even if the Iraqis did not, Schwarzkopf offered as explanation this metaphor . . . "Guys in black hats are allowed to shoot people in the back, hide behind rocks, all that sort of stuff. Guys in white hats don't do that."*

If our political and military leaders wisely adhere to and promote the Western idea, they may well bring about an unprecedented era of global peace and freedom. ***MR***

NOTES

1. This essay is a slightly revised version of the essay that won the 1991 Douglas MacArthur Military Leadership Writing Competition at the Command and General Staff Officers Course, US Army Command and General Staff College, Fort Leavenworth, Kansas. I want to thank Major Melissa Patrick and Major Jeffery Long for recommending several revisions.
2. Martin Anderson, "Gulf War was a First for U. S. Military," *Los Angeles Times;* reprinted in the *Kansas City Star*, 14 April 1991, I–2.
3. See for example, Kenneth T. Walsh, "Bush's 'Just War' Doctrine," *U. S. News and World Report* (4 February 1991):52–53.
4. See for example, Paul Weingarten, "Chaos of War is Guided by Rules," *Chicago Tribune;* reprinted in the *Kansas City Star*, 17 February 1991, J–I.
5. Stories of the feigned surrenders of 29 January 1991, at Khafji were widely carried on the Cable News Network and in the print media in the week after the battle.
6. Michael Walzer, *Just and Unjust Wars* (New York: Basic Books, 1977), 8–9, 240–41.
7. Alistair Horne, *A Savage War of Peace* (New York: Penguin Books, 1977), 28.
8. Ibid., 538.
9. See for example, Hugo Grotius, *De Jure Belli Ac Pacis Libri Tres*, 1625, rpt. *Hugo Grotius on the Law of War and Peace*, trans. Francis W. Kelsey, ed. James Brown Scott, (New York: Oceana Publications, 1964) vol. 2, book 3, chap. 12. See also Francisco de Vitoria, *De Indis et de Ivre Belli Relectiones*, 1557; rpt. trans. John Pawley Bates, ed. Ernest Nys (New York: Oceana Publications, 1964).
10. In the wake of *Desert Storm*, there has been some criticism of the supposedly unnecessary or wanton "battles of annihilation" waged by allied forces against retreating or greatly debilitated Iraqi ground units in Kuwait and Iraq. (Others have argued that the destruction of the Iraqi forces ended too soon.) I think it is too soon to debate the issue conclusively because we do not yet have all of the facts. What is clear at this stage is that Iraqi units that continued to resist or to attempt to break out from pending encirclement were fired upon, in accordance with the rules of war. This was just conduct. Allied units made extraordinary efforts to encourage Iraqi soldiers to surrender and gave good treatment to those who did. This was humane conduct.
11. For an excellent examination of the tremendous tactical and categorical difficulties of separating combatant from noncombatant in a rural low–intensity conflict (such as Vietnam), see Jeffrey Race, *War Comes to Long An* (Berkeley: University of California Press, 1972).
12. Walzer, 9–10.
13. Dr. E. Maynard Adams, Department of Philosophy, University of North Carolina at Chapel Hill, coined this phrase. He first brought my attention to this notion in 1985.
14. Francis Fukuyama, "The End of History?" in *The National Interest* (Summer, 1989):3.
15. E. Maynard Adams, *Mind, Value, and Culture: Essays in Honor of E. M. Adams*, ed. David Weissbord (Atascadero, CA: Ridgeview Publishing, 1989) 359. See also E. Maynard Adams, "The Cultural and Social Viability of the Idea of America in the Next Century," *The Idea of America* (Cambridge: Ballinger Publishing, 1977), 195–223.
16. Fukuyama, 14.
17. Ibid., 17.
18. Anatoly Sobchak cited by Michael Dobbs, "Soviet Crusader against Communism," *The Washington Post*, reprinted in the *Kansas City Star*, 7 April 1991, K–5.
19. Edna J. Hunter and COL Howard T. Prince II, "Focus on Combat Stress," *Marine Corps Gazette* (August, 1988):58–64; reprinted in *Fundamentals of Senior–Level Leadership in Peace and War* (Fort Leavenworth, KS: US Army Command and General Staff College, 1990), 71.
20. Ibid., 71.
21. Ibid., 71.
22. Douglas Porch, "Bugeaud, Gallieni, Lyautey: The Development of French Colonial Warfare," *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, ed. Peter Paret, (Princeton, NJ: Princeton University Press, 1986), 382.
23. E. Maynard Adams, "The Accountability of Religious Discourse," *International Journal for Philosophy of Religion 18* (1985):7.
24. Ibid., 6–8.
25. Anthony E. Hartle, *Moral Issues in Military Decision Making* (Lawrence, KS: University Press of Kansas, 1989), 71–78, 95–97.
26. Cited by Weingarten, J–I.

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The American Army in PEACETIME

Edward M. Coffman

With the end of the Cold War, the Army is again faced with the task of force reductions. The author reviews the factors that influence the size and shape of an army. He then examines how previous reductions have affected the Army from the Revolutionary War through World War II. Finally, the author offers comments about present restructuring and how history need not repeat itself.

THE END of the Cold War is bringing about significant reductions in the military budget, with the resulting base closures and, ultimately, force reductions. For more than four decades, the presence of an obvious potential enemy focused military thinking and kept military spending and strength much larger than in other periods between wars throughout American history. Besides, there were two rather large-scale wars in the past 40 years that brought about sizable buildups and partial demobilizations. As planners look to the future, however, it should be of value to know how the Army has coped with the problems of decreased budgets and strength in the past.

The factors that influence the size and shape of an army are:

- The national ethos.
- The domestic and foreign environment, including natural resources and geographic location, as well as the changing foreign and domestic situations.
- The evolution of technology.

The continuous, ever-changing interplay of these factors is complex and, as any historian should be the first to admit, makes predictions tenuous. Nevertheless, one can determine the natural resources and industrial base readily enough and posit that a nation's military ambitions should not outstretch those or that country risks disaster and inevitable decline. Nor is it difficult to follow the evolution of technology and the record of a nation's ability to take advantage of technology's military possibilities, its resources

[Washington] recommended a strength of 2,631 officers and men ... The next year, 1784, Congress created a Regular Army but with a strength of only 80 officers and men to guard military stores left over from the war.... As one of President Thomas Jefferson's ... cabinet members said in 1802: "The distribution of our little army to distant garrisons where hardly any other inhabitant is to be found is the most eligible arrangement of that perhaps necessary evil that can be contrived."

and industrial base under the pressure of a threat. When the domestic and foreign situations present no major threats, a people will probably not push hard to exploit their technology or to derive as much military power as they can from their resources. Then too, even during wartime, the nature of the war—major or minor—will govern the demands a nation will make on itself. Of course, an ambitious authoritarian ruler may manipulate the political or diplomatic situation in order to create military power beyond the realistic needs of his nation. But he and his nation will suffer the consequences if his ambitions outstrip the limitations of national resources.

In peacetime, the national ethos—the traditional attitudes and customs of a nation—is apt to play a more important role than other factors in establishing the limits and conditions that frame the shape of a military force. This ethos also plays a role during war; but when there is no menace large enough to bring about a sense of emergency, hence urgent need for military power, the army is not the focus of national interest and is more subject to the attitudes and customs of the people it serves.

The two aspects of this ethos that have been particularly influential in US history are the traditional prejudice against professional soldiers and a Standing Army generally and the concept that if wars came, civilians, not Regulars, would save the day. It is not the purpose of this article to answer the questions of how pervasive these beliefs are in the 1990s and how much they affect the current Congress in its deliberations about the future of the Army. Indeed, they are unanswerable in specific terms because individuals themselves may not be fully aware of the historical baggage they carry that influences their thinking and actions. We do know, however, that this ethos kept the US Army in peacetime very small in relation to the armies of other nations throughout the approximately 160 years between the War of Independence and World War II.

During that lengthy period, the five wars separated many "old armies," as the veterans who bridged from one peacetime to another would always remember the Army they knew before the last war. There were differences in those old armies as these men were quick to point out; but from the vantage point of 1992, we can see that there were essentially two major divisions—a frontier constabulary with the primary mission of controlling the frontier, which lasted from the 1780s to the 1890s, and from 1898 to 1941, an army to cope with the responsibilities and prob-

US forces storming the Citadel during the siege of Monterey, Mexico, 23 September 1846.

As far as the public was concerned, if it gave the matter any thought, the key to victory in any future war was not the Regular Army but the militia—the citizen soldiery. Why worry about the fact that the Standing Army was very small compared to that of other nations. Mexico, for example, had an army quadruple the size of the US Regular Army in the 1840.

lems of a world power, specifically to garrison Carribean and Pacific colonies, as well as to maintain a continental defense force. Then, following the nation's rise to superpower status in World War II and during the long years of confrontation with the Soviet Union, there was the Cold War Army.

Frontier Constabulary

As the War of Independence drew to a close, George Washington cautiously advanced the idea that the new nation needed a Regular Army. The phrasing of his "Sentiments on a Peace Establishment" indicates his awareness of the traditional antimilitary prejudice:

"Altho' a *large* (Washington's emphasis) Standing Army in time of Peace hath ever been considered dangerous to the liberties of a Country, yet a few Troops under certain circumstances are not only safe, but indispensably necessary."[1]

He then recommended a strength of 2,631 officers and men for this force. The next year, 1784, Congress created a Regular Army but with a strength of only 80 officers and men to guard military stores left over from the war. To supplement this meager force, the legislators authorized a call-up of 700 troops for one year's service on the frontier. A commentator of the day said of this small army when it took up its posts on the frontier: "They are rather prisoners of that country, than in possession of it. . . . all they can do is take care of themselves."[2] Despite its national

potential, as well as the threat that people then saw in the Indians, a relatively small army was all that the nation would tolerate. As one of President Thomas Jefferson's most prominent cabinet members said in 1802:

"The distribution of our little army to distant garrisons where hardly any other inhabitant is to be found is the most eligible arrangement of that perhaps necessary evil that can be contrived."[3]

The five wars separated many "old armies," as the veterans who bridged from one peacetime to another would always remember the Army they knew before the last war [but] ... there were essentially two major divisions—a frontier constabulary with the primary mission of controlling the frontier, which lasted ... to the 1890s, and ... an army to cope with the responsibilities and problems of a world power.

Up to the Mexican War in the late 1840s, the peacetime strength was usually less than 10,000.[4] With the acquisition of so much additional territory after that war, the Army peaked at under 18,000 prior to the Civil War. Garrisoning the frontier, often with less than 100 officers and men at a makeshift post, and taking part in periodic hostilities with the Indians were the accepted tasks of the Regulars. The establishment of the Military Academy in 1802 was certainly a mark of institutional permanence but, significantly, the largest graduating class in the first century of its existence was John J. Pershing's class of 1886, which had only 77 members.

In 1820, Secretary of War John C. Calhoun broached the topic of planning for future wars with his proposal for a reduction in force that would preserve the officer corps and a cadre of noncommissioned officers, thus enabling a rapid expansion with recruits in time of war. Congress rejected this and opted for the less expensive cut across the board. When the Army expanded before the 1850s, a new regiment consisted of officers, as well as men who came from civil life rather than than a cadre that recruited up to strength. Calhoun gave another indication of looking to the future when he established an artillery school at Fort Monroe, Virginia.

As far as the public was concerned, if it gave the matter any thought, the key to victory in any future war was not the Regular Army but the militia—the citizen soldiery. Why worry about the fact that the Standing Army was very small compared to that of other nations. Mexico, for example, had an army quadruple the size of the US Regular Army in the 1840s. What difference did that make? After all, in 1836 when the Army numbered just under 10,000 a Regular engineer officer projected that with 11 days' notice, the government could expect to have 987,185 militiamen on duty at nine major port cities.[5] Most Americans remembered the great victory won by General Andrew "Andy" Jackson's Kentucky and Tennessee riflemen at New Orleans in 1815.

The Militia Act of 1792 placed all white male citizens between the ages of 18 and 45 in the militia. While it provided for neither federal financial support nor supervision, it certainly created a great manpower pool. And, as one civilian military expert pointed out in 1826: "The militia is what is left after society is purified by army enlistments."[6] Those who thought like that (more than likely the vast majority) were hardly concerned about the fact that the Regulars had to depend, to a large extent, on immigrants (ranging from roughly a fourth of the enlisted strength in the 1820s to two-thirds in the 1850s) and that officers chafed at the slow promotion rate resulting from the small size of the Army and the lack of a retirement policy.

In 1836, the adjutant general predicted that the 49 West Point graduates that year could expect to spend eight years as second lieutenants, 10 years as first lieutenants, 20 years as captains, 10 years as majors and another 10 years as lieutenant colonels before reaching the rank of colonel, after 58 years' service, in 1894. The most a good man of long service in the ranks could hope for was a sinecure appointment such as post ordnance sergeant. While retirement laws for offi-

Frontier fort, circa 1870.

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As early as 1876, General William T. Sherman revived Calhoun's concept... that the Army should prepare for future wars. And, in 1881, it was Sherman who established a school for infantry and cavalry officers at Fort Leavenworth.... By the 1890s, it was possible to close many of the small forts that had been built because of the Indian Wars and concentrate the troops in larger garrisons where training schedules could be introduced and followed with some regularity.

cers after 40 years' service in 1861 and for enlisted men after 30 years in 1885 eased the situation somewhat for Regulars, the Army still remained relatively small. With 28,000 officers and men, it was less than half the strength of Belgium's army in the 1880s.[7]

The militia system in fact, as opposed to the vast army imagined by those who opposed increasing the strength of the Regular Army, was on the decline throughout the period between the War of 1812 and the Civil War and did not begin to revive to any great extent until the 1870s. While soldiers then, and many military historians later, scoffed at the disparity between the myth and the reality of the militia, one cardinal fact is obvious: In time of war, vast numbers of citizens did take up arms and make up the overwhelming majority of the victorious Army. To be sure, they were wartime volunteers rather than members of organized militia units, but they were citizen–soldiers nonetheless.

Throughout the 19th century, the size and makeup of the Army hardly reflected proportional changes in the vast natural resources and increasing population, as well as changing technology. From the 1790s to the Spanish–American War in 1898, the national population increased more than 18 times, while the strength

of the Standing Army grew at a much smaller level—approximately sevenfold. At the same time, while late 19th century soldiers carried improved weapons, there had been relatively little organizational change in the Regular force to reflect technological developments.

When it became clear that the end of the Indian Wars was at hand, Army leaders began searching for another mission to justify their existence. As early as 1876, General William T. Sherman revived Calhoun's concept of more than 50 years earlier that the Army should prepare for future wars. And, in 1881, it was Sherman who established a school for infantry and cavalry officers at Fort Leavenworth, Kansas. This indicated that the Army was moving beyond the days when garrison duties and patrolling marked the range of most officers' professional endeavors. By the 1890s, it was possible to close many of the small forts that had been built because of the Indian Wars and concentrate the troops in larger garrisons where training schedules could be introduced and followed with some regularity.

[Root's] plan that Congress enacted was to provide federal support to standardize officer and soldier requirements, weapons and organization, as well as to provide for joint training with the Regular Army. It also made a crucial distinction between that part of the militia that was organized and the much greater part of American manhood that *was subject to call but did* not belong to a unit.

Change was at hand. Those who had served any length of time prior to 1890 had to be impressed by the improvements in the soldier's lot and the enhancement of professionalism that the new professional branch organizations and the larger forts made possible. Such changes were not so apparent, however, to a bright, young officer entering the service at the time. Johnson Hagood, whose point of view may have been affected by the fact that he had to remain an Additional 2d Lieutenant for 14 months after his graduation from West Point in 1896 due to the limits on officer strength, summed up his view of the army as he first knew it:

"It was like a well trained fire department with no fires, and the firemen sitting out in front of the fire house playing checkers."[8]

Army of a World Power

While not as long as the era of the frontier constabulary, the slightly more than four decades from the Spanish–American War to World War II was a time of tremendous change in the peacetime Army. Virtually all of these changes had their beginnings prior to World War I. During this period, the American ethos certainly played an important role, as always, in keeping the Army relatively small, and it was the crucial factor in decisions regarding how citizen–soldiers would participate in military affairs. The environment, to include both foreign and domestic developments, however, was the dominant influence in shaping the Army. Technology also brought about rapid changes; but most of them, while initiated before the nation went to war in 1917, were not pushed hard until the nation entered that war. Thus technology's effect was relatively slight on the prewar Army, but rather large indeed on the Army of the 1920s and 1930s.

The brief war with Spain brought the United States an empire that, in the Philippines, meant a rather large war from 1899 to 1902. After the defeat of the Filipino nationalists in what Americans called the Philippine Insurrection, US troops and their native auxiliaries, the Philippine Scouts, fought the Moros for several more years. The last major battle was in June 1913 when Pershing led a combined force of some 1,200 Regulars and scouts against 5,000 or more Moros on the southern island of Jolo. The demands of winning the two wars in the Philippines, garrisoning this new empire that also included Hawaii, Puerto Rico and, later, the Panama Canal Zone, as well as, after 1912, maintaining an outpost in China, resulted in an army of more than

The demands of winning the two wars in the Philippines, garrisoning this new empire that also included Hawaii, Puerto Rico and, later, the Panama Canal Zone, as well as, after 1912, maintaining an outpost in China, resulted in an army of more than 100,000 in 1916. This was almost quadruple the strength of the Army in the three decades prior to the Spanish–American War.

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The domestic aspect of the environment affected the Army most prominently through the reforms of Secretary of War Elihu Root. In his first annual report in 1899, Root articulated clearly the conceptual basis of his actions:

"Two propositions seem to me fundamental. . . . First. That the real object of having an army is to provide for war. Second. That the regular establishment in the United States will probably never be by itself the whole machine with which any war will be fought."[9] The brilliant New York corporation lawyer proceeded to move toward bringing his concepts to fruition by making major institutional changes. The emergence of large business corporations in the late 19th century, and after the turn of the century, the Progressive movement's creation of state and federal governmental machinery to regulate and serve as a counterweight to big business led to a marked increase in bureaucracy. Root's desire to establish a general staff to serve as a supervisory agency thus fit in with what was going on in the nation at the time. His creation of the Army War College and encouragement of the revitalization of the Army school at Fort Leavenworth served to educate officers to tasks commensurate with a much larger army—the kind of army that the United States would field in time of war.

Finally, Root sought to bring the citizen soldiery into the 20th century. He recognized that the Militia Act of 1792, which had been, for the most part, a scoff law since before the Civil War, should be replaced. His plan that Congress enacted was to provide federal support to standardize officer and soldier requirements, weapons and organization, as well as to provide for joint training with the Regular Army. It made a crucial distinction between that part of the militia that was organized and the much greater part of

American manhood that was subject to call but did not belong to a unit. Where the national ethos played a crucial role was in the fight between Regulars who thought that citizen–soldiers should be in a federal force and National Guard advocates who wanted to keep the militia under state control. The tradition of states rights was too strong to permit more than the formation of a token Reserve force prior to World War I. One not surprising side effect of this fight, which raged for more than 10 years prior to a compromise in 1916 that provided for National Guard recruits' taking a double oath to both the state and federal governments at the time of enlistment, was a deep–seated animosity between National Guard and Regular officers.

[In the 1930's Army] "Ground and air officers alike stubbornly carried out their duties among a people hoping and trying to believe that all officers were as useless as their saber chains. It was a weird, almost furtive existence, like that of firemen trying to guard a wooden city whose occupants pretended it was fireproof."

Soldiers in the first decades of the century observed the development of the truck, the airplane, the machinegun and the evolution of high–trajectory field pieces, but they did not have to watch them too closely because they had little immediate effect on most of the Army. The commander of the Ninth Army in World War II, General William H. Simpson, who went into Mexico with Pershing's Punitive Expedition as an infantry lieutenant, recalled there was little difference in the infantry weapons of the Civil War and those his men carried in the 6th Infantry in 1916. To be sure, the Springfield 1903 rifle and the .45 caliber revolver were markedly better small arms than those the Civil War troops carried, but Simpson's point was that men in both eras simply carried small arms.[10] Each regiment, by 1916, had a platoon of four machineguns, but the guns did not work very well, and most officers and men paid little attention to them.

Trucks, organized into truck companies in the Quartermaster Corps, helped support the Punitive Expedition of some 10,000 troops that Pershing led into Mexico, but they were hardly commonplace. The First Aero Squadron was also with Pershing, but all of the unarmed planes soon crashed, and those interested in aviation found themselves serving in a section of the Signal Corps until World War I was well under way. The artillery prospered as it split into Field and Coast Artillery in 1907. Although still horse–drawn, the new 3–inch guns were probably on par with the much more famed French 75s. For officers with a technological bent, the Coast Artillery with its advanced electronics was exciting and offered quicker promotion. In fact, the creation of these two new branches was the most drastic impact on organization that any technological development had on the Army between 1898 and 1917.

During 19 months of war in 1917–1918, the United States rapidly expanded its Armed Forces and managed to ship an expeditionary force of some 2 million men to France. It was an extraordinary effort. The Army paid technology its due with the creation of a Tank Corps, Air Service and Chemical Warfare Service, but only the latter two lasted into the peacetime. It was not until 1940 that an armored force came into being, followed by the organization of two armored divisions shortly thereafter.

In 1921, Secretary of War John W. Weeks sounded a familiar note in his annual report: "The American people are traditionally opposed to the maintenance of a large, Standing Army."[11] General George C. Marshall later recalled the result of this traditional attitude: "the cuts and cuts and cuts came."[12] With an Army that reached its nadir between World Wars I and II of some 133,000 in 1923 and was just under 190,000 when Europe went to war in 1939, it was smaller than the Belgian army in the mid–1930s and ranked 18th in strength among the armies of the world. In an effort to maintain units, the Army kept rifle companies, for example, with

Seventh Infantry soldiers loading onto Motor Transport Service trucks west of Moulins, France, 30 July 1918.

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only 70 men rather than at the authorized strength of 198. The reason seemed clear to a *Fortune* magazine writer in 1935: "But nobody loves the Army. In peace it all but rots; in war it swells to the bursting point."[13]

While the American ethos was clearly a dominant factor in keeping the Army at such a reduced level throughout this period, the Great Depression in the 1930s also played its part in keeping budgets low. There were bright spots, nonetheless. For the first time in peacetime, there was serious planning for the economic aspect of war, supplemented by the establishment of the Army Industrial College. During this period, the Army schools—in particular, the Command and General Staff School at Fort Leavenworth and the Army War College, whose graduates proved their worth in World War I—flourished. General Omar N. Bradley later credited their importance as "one of the largest contributors to our success in World War II."[14]

The Army of 1939 was a far cry from the one that went into the Spanish–American War. The technological changes alone must have seemed astounding to those officers nearing the end of their 40 years' service. Yet, the Army remained essentially in its traditional position on the periphery of American life. A bright, young

flyer in the Air Corps, Noel Parrish, summed up the Army's situation on the brink of World War II:

"Ground and air officers alike stubbornly carried out their duties among a people hoping and trying to believe that all officers were as useless as their saber chains. It was a weird, almost furtive existence, like that of firemen trying to guard a wooden city whose occupants pretended it was fireproof."[15]

Cold War Army

Americans crowded together in the streets to welcome the end of World War II. They expected and got the boys home as the Army of more than 8 million was down to 554,000 by 1948. After all, we did have the atomic bomb, and the Russian threat did not turn into the Cold War until 1948. For the next four decades, the international environment was the key factor in shaping the US Army.

Technology was influential, but not as significant as the foreign situation. In 1947, Army airmen attained their goal of a separate service, while in later years a new generation of Army airmen obtained another aviation branch. Over the years, there were new weapons, new mechanized equipment and the developing military–industrial complex that supported the Army as well as the other services. The existence of a significant part of the economy dedicated to war materiel certainly did not fit in well with the traditional American antimilitary attitude. But the exigencies of the Cold War demanded that the economy, as well as the military, be more ready for action than in the past when geographic isolation and less sophisticated transportation systems gave the United States time for more leisurely preparation for war.

The ethos took a pounding in another area as well—military manpower. There had been a peacetime draft shortly before World War II, but during the Cold War, for the first time in history, the draft continued to exist throughout years of peacetime. Although it stopped in 1947, it resumed in the middle of 1948 and continued until 1973. Despite efforts by the Eisenhower administration to cut the strength of the Army, it remained at more than 800,000 during the latter part of the 1950s and climbed another 100,000 in the 1960s before it took off again in the Vietnam War buildup. By the 1980s, it had dropped to about 780,000 but was an All-Volunteer Force.

The thrust toward greater standardization and more federal funding of the National Guard continued throughout the Cold War era, with the Guard and Reserve formed into a Total Force

Early morning calisthenics at Nellingen Barracks, Germany, circa 1954

There had been a peacetime draft shortly before World War II, but during the Cold War, for the first time in history, the draft continued to exist throughout years of peacetime. Although it stopped in 1947, it resumed in the middle of 1948 and continued until 1973. Despite efforts by the Eisenhower administration to cut the strength of the Army, it remained at more than 800,000 during the latter part of the 1950s and climbed another 100,000 in the 1960s before it took off again in the Vietnam War buildup.

with the Regulars after the Vietnam War. The state governors still had some control over their units, but the strength of these forces was less than half of the Standing Army throughout most of this period.[16] The demands of the Cold War thus suppressed the apprehensions of the American ethos toward a Standing Army at the expense of the traditional dominance of the citizen–soldiery.

Since the attitudes and habits that held sway for the first 125 years of the nation's existence have been in the shadow of the Cold War for so long, do Americans even remember them? It is true that, after being overrun by the foreign situation of the first two decades of this century, they returned full blown in the 1920s and 1930s. But that was only a 20–year span. This latest hiatus lasted more than 40 years, and perhaps as many as 60 percent of the population was not even born by 1945.

Many Americans may not remember their history, but they are concerned about large budgets, and they want a smaller Army. The end of the Cold War seems to permit such a reduction in force. Rather than a general revival of the anti–Standing Army attitude (which in some circles has certainly never died out), Americans can simply point to the improving foreign environment when they call for reductions in force. Technology, however, will never permit a return to the belief that defense is simply a matter of the sturdy yeoman farmer grabbing his musket and marching off for a few weeks, or perhaps months, to solve the military problem. Indeed, national defense was never that simple, even in the 18th century. The outstanding performance of the Army in the Gulf War has built up people's confidence in the service, but this does not mean that they will support its current strength. Consciously or unconsciously, the traditional American ethos is again coming to the fore and will again be significant on the military scene until another foreign or domestic emergency of critical magnitude arises. Yet, it is unlikely that the Army will ever return to the periphery of American life where it was located throughout the peacetime periods prior to World War II, when some intelligent citizens did not even realize that the nation had a Regular Army. ***MR***

Many Americans may not remember their history, but they are concerned about large budgets, and they want a smaller Army.... Technology, however, will never permit a return to the belief that defense is simply a matter of the sturdy yeoman farmer grabbing his musket and marching off for a few weeks, or perhaps months, to solve the military problem.

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SDI
The Impact on Deterrence

Rolin G. Mainuddin

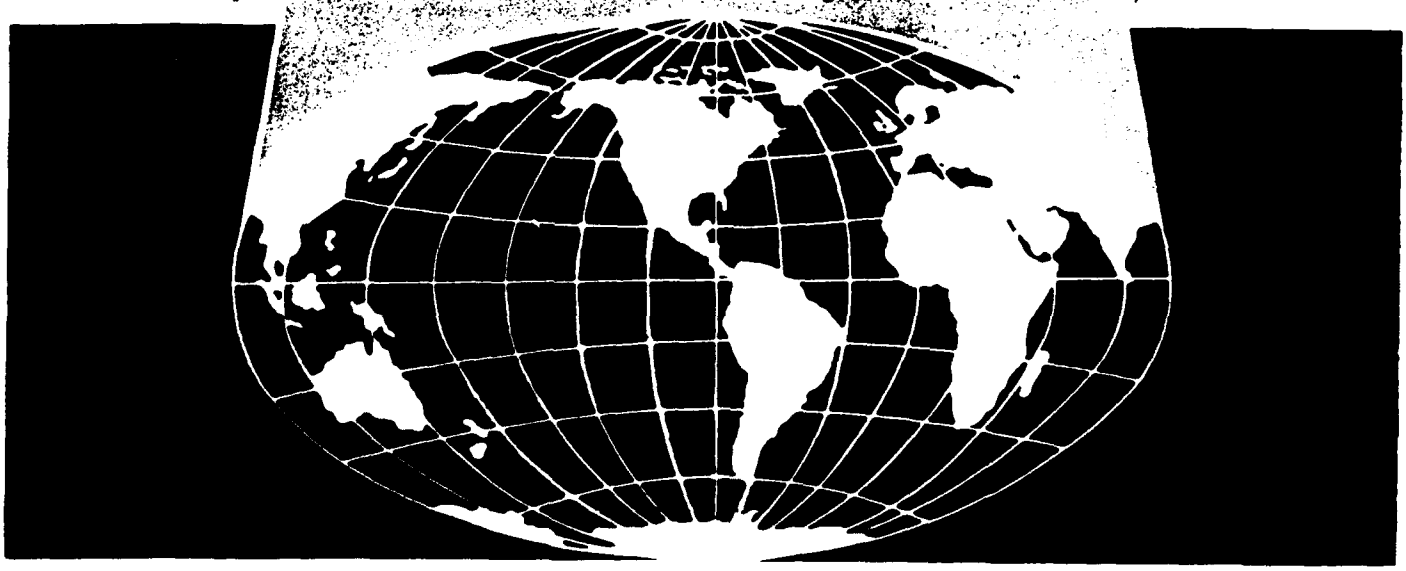
The Strategic Defense Initiative (SDI) program was designed to change the mutual assured destruction doctrine to a defensive strategy. The author examines the SDI initiative from the point of view of when is it defensive and when is it offensive. He looks at the different phases of an intercontinental ballistic missile's trajectory and how the missile can be tracked and intercepted during each phase. Finally, the author points out the advantages and disadvantages of early interception and its impact on deterrence stability.

THE CENTRAL plank of nuclear deterrence between the United States and the Soviet Union in the post–World War II era has been based on the mutual assured destruction (MAD) doctrine. It is based on an offensive strategy. The Strategic Defense Initiative (SDI) program is designed to change the strategy to a defensive one. In this article, I argue that as the point of interception of an incoming intercontinental ballistic missile (ICBM) by an antiballistic missile (ABM) gets closer to the aggressor, the perceived threat to the aggressor increases. In particular, an "astrodome" defense involving boost and postboost phase interceptions will destabilize superpower nuclear deterrence because of a misperceived first-strike capability. To overcome this instability, the SDI must be limited to the midcourse and terminal phase interceptions.

In his 23 March 1983 speech, former President Ronald Reagan made his first public appeal for the SDI program.[1] The proposed research scheme would do away with the mutual hostage situation enshrined in the MAD doctrine. Accordingly, instead of leaving the population vulnerable, the defensive shield of the SDI would strengthen deterrence by increasing the uncertainty of a successful attack.[2] In other words, the SDI would protect a country's retaliatory capability by blocking an attack by an aggressor.[3]

SDI incorporates four layers of defense.[4] These layers are related to the four phases of an ICBM's trajectory: boost, postboost, midcourse and terminal (see figure). Some scholars do not distinguish between boost and postboost phases. Therefore, they refer to three layers of defense.[5]

During the boost phase, the ICBM emits infrared light that can be detected by a satellite.

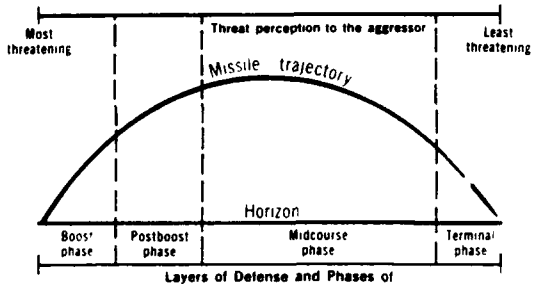


The postboost phase begins when this intense level of infrared emission stops. The "bus" carrying the warhead (and decoys) still intermittently gives out small infrared light. This phase ends with the ICBM releasing the warhead. At this point, the midcourse phase begins and continues till the warhead reenters the earth's atmosphere over the target country. Beyond the reentry point is the terminal phase. Detection is again relatively easy at this stage from the heat generated from reentry and because the decoys burn up in the process.[6] The point at which an incoming ICBM is intercepted by an ABM (a subsystem of a ballistic missile defense (BMD) has psychological implications for both the intended victim and aggressor.[7]

The Point of Interception and Threat Perception

On one hand, the farther away a target country can intercept an incoming ICBM, the more secure it is for the target country. By the same token, the closer to the aggressor a target country can intercept an ICBM, the more threatening it is to the aggressor.

The terminal phase interception is the least threatening, and the boost phase interception is the most threatening to the aggressor. In other words, as the point of interception of an incoming ICBM by an ABM shifts from the terminal phase to the boost phase, the interception becomes all the more threatening to the aggressor.



Layers of Defense and Phases of Interception of Incoming Intercontinental Ballistic Missiles

SOURCE: The four layers of defense are derived from four phases of an ICMB's trajectory. (The President's Strategic Defense Initiative, 1985, 2; Guertner & Snow, 1986, 69—71; Smoke, 1987, 250—51) Others combine the boost and postboost phases into a single phase (Fought, 1987, 40; Graham, 1983, 50—51; Young, 1984, 149—50). Yet another perspective primarily stressed two phases (Legault & Lindsey, 1976, 41—42).

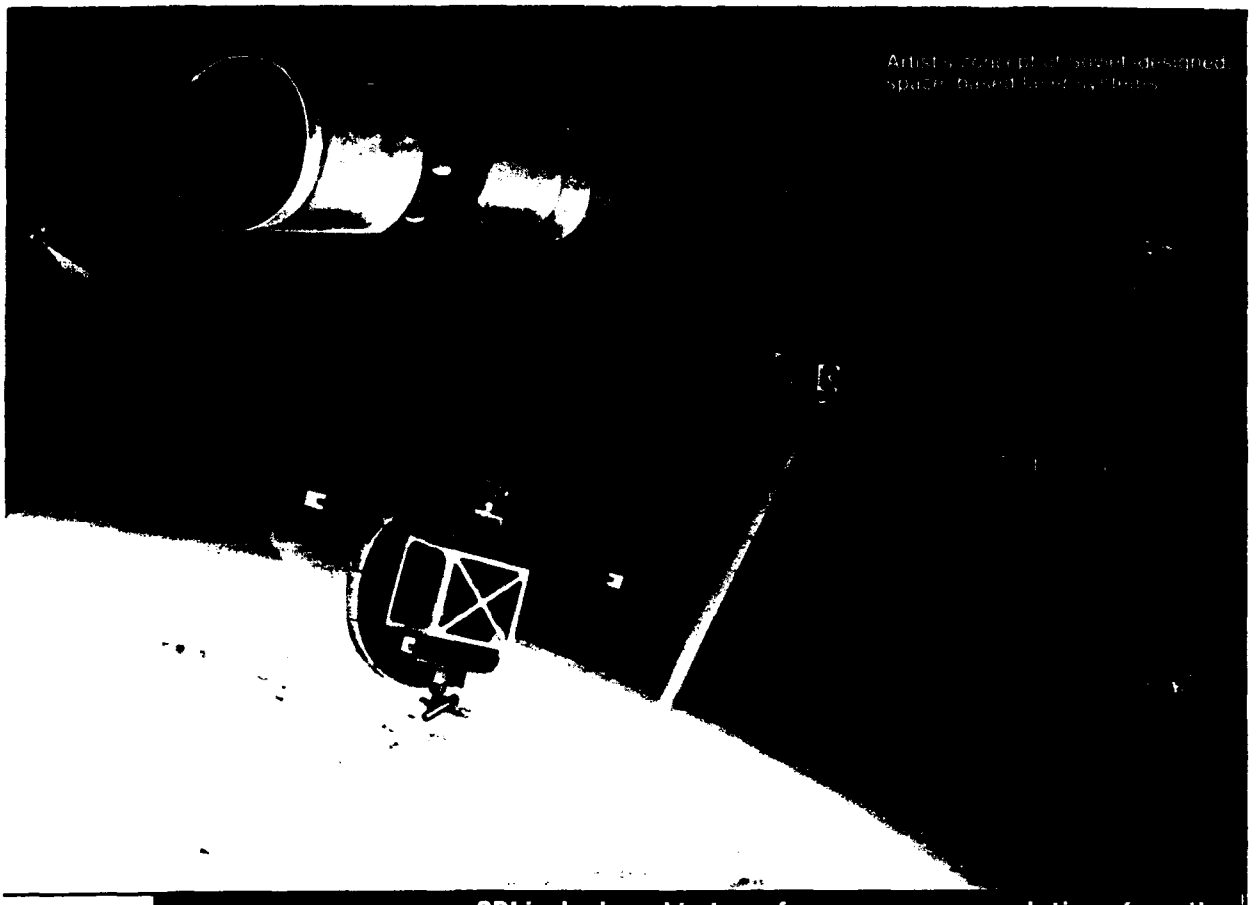
The Phases of Interception and Threat Perception to the Aggressor

The farther away a target country can intercept an incoming ICBM, the more secure it is for the target country. By the same token, the closer to the aggressor a target country can intercept an ICBM, the more threatening it is to the aggressor.

This leads to the possibility of a *reactive, counter-retaliatory* threat by the aggressor against the other country.[8] This threat, if carried out, will break down superpower nuclear deterrence.

It takes about 4 minutes for a missile to complete both the boost and postboost phases. The midcourse phase takes about 30 minutes. The terminal phase lasts only 15 seconds.[9] According to one group of scientists, the boost phase alone takes about 4 minutes. Another source indicates that the boost and postboost phases together last for 7 minutes. Yet another source views the terminal phase to be about a minute.[10] Even after failing to intercept an incoming ICBM at the boost and postboost phases, a country has a little more than 30 minutes to execute subsequent layers of defense. Thus, beginning the interception process at the boost phase gives the target country additional reaction time. This extra time is both technically defensive and psychologically reassuring to the target country.

Consequently, a country would have an interest in an early interception of an incoming ICBM. In fact, a boost or postboost phase interception would prevent the incoming ICBM from releasing its warhead.[11] Also, the earlier an ABM can intercept an incoming ICBM, the better are the chances of preventing the ICBM from releasing decoys to confuse the defensive system.[12] Furthermore, it can be argued that by declaring the point of interception more threatening to the aggressor, deterrence stability would be enhanced. In addition, a boost phase interception can extend the benefits of a BMD system to the allies.[13]



SDI is designed to transform superpower relations from the offense–dominant scenario of MAD to a defense–dominant one of mutual assured survival (MAS). The MAS doctrine implies an "astrodome" defense which places a missile–proof "helmet" over the whole country. BMD systems, acting as astrodome defenses, are expected to ensure mutual survival of the superpowers against incoming ICBMs from any direction. . . . Even though both MAD and MAS may be stable, the transition from one scenario to the other is unstable.

Nevertheless, a boost phase interception would imply destruction of the missile and warhead within the aggressor's atmosphere.[14] The aggressor will find such a scenario threatening. Even the falling debris could cause considerable damage in the aggressor's territory.[15] To the aggressor, boost and postboost phase interceptions reintroduce the element of offense under a defensive umbrella. Given this misperception, the SDI will not ensure mutual survival of the superpowers during the uncertain transitional phase.

Transitional Instability

The SDI is designed to transform superpower relations from the offense–dominant scenario of MAD to a defense–dominant one of mutual assured survival (MAS).[16] The MAS doctrine implies an "astrodome" defense which places a missile–proof "helmet" over the whole country. BMD systems, acting as astrodome defenses, are expected to ensure mutual survival of the superpowers against incoming ICBMs from any direction.[17] As noted above, the SDI is postulated to replace a damage–maximizing strategy by a damage–minimizing strategy that will destroy incoming ICBMs in their flight.[18]

The MAD doctrine evokes an image of the superpowers facing each other with swords, but without effective defensive shields. In contrast, the MAS doctrine underscores an image of the superpowers facing each other with giant shields, but without effective offensive swords.[19] Even though both MAD and MAS may be stable, the transition from one scenario to the other is un-

stable.[20] The SDI relates to this transition where the superpowers will have swords while developing shields.[21] It is within this context of transitional instability that one must consider the possibility of a misperceived first–strike capability.

Misperceived First–Strike Capability

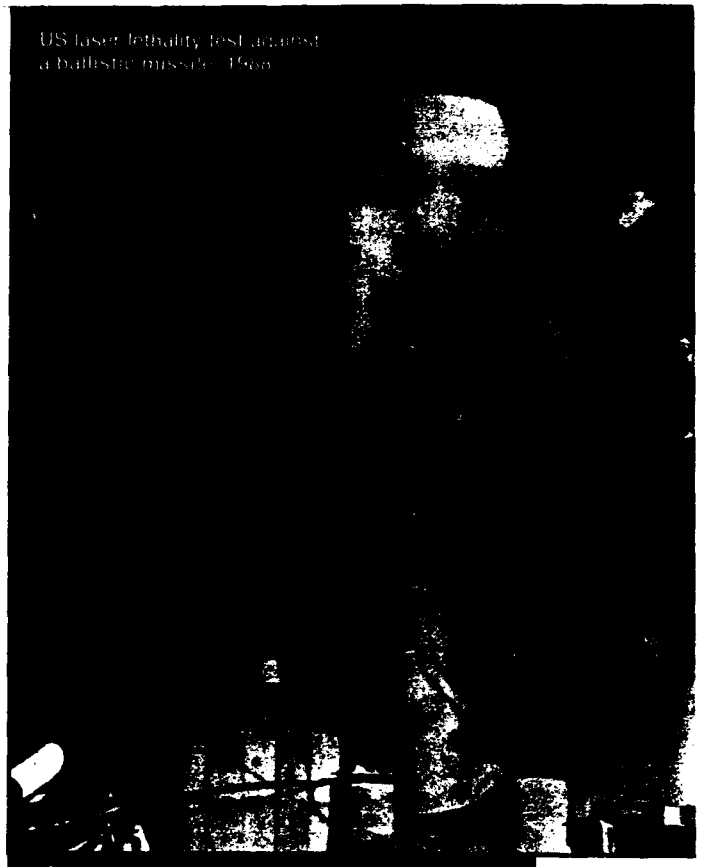
Boost and postboost phase interceptions would involve placing the weapons and associated equipment in space.[22] The satellites carrying these weapons and orbiting around the earth would be like floating guns ready to strike at an aggressor. It needs to be emphasized that a satellite deployed to destroy an incoming ICBM at an incipient stage also has the potential to be used as an offensive weapon.[23]

Boost and postboost phase interceptions lose the offensive–defensive distinction. For both the victim and aggressor, the distinction is in the perceived intent of the adversary. Rather than doing away with the mutual hostage situation, it would be perpetuated through a different mechanism. The crucial difference is that unlike the MAD scenario, the reaction time for the above MAS scenario is much shorter.[24] MAS doctrine, with its boost and postboost phase interceptions, would usher in a relatively unstable deterrence because of the aggressor's *misperception of a first–strike capability by the adversary*.[25] This instability in superpower nuclear deterrence could be avoided by a limited phase SDI.

A more stable nuclear deterrence would involve limiting the SDI to the midcourse and terminal phases. As the terminal phase is for a short duration, much of the burden of interception will be during the midcourse phase.[26] It is true that a midcourse interception would be more complex than at the earlier phases. By then, the incoming ICBM would have released its decoys along with the warhead. The release of multiple warheads would further complicate interception of an incoming ICBM.[27] Nevertheless, a midcourse interception is less unstable than interceptions at the boost and postboost phases.

A midcourse interception need not be limited to ground–based weapons. An incoming ICBM could be intercepted in space with space–based weapons carried in satellites. In fact, laser weapons must be placed in space for greater effectiveness.[28] However, the satellites are to be in a fixed position over their country of origin. Fixed positioning of satellite weapons over one's own territory will assuage the fear of a potential first–strike capability in superpower relations.

Limiting interception of an incoming ICBM to the midcourse and terminal phases does not negate the notion of an astrodome defense. The weapons in space, over the potential target country's territory, would be intercepting an incoming ICBM from any direction. However, it



US laser lethality test against a ballistic missile. (Navy)

The satellites carrying these weapons and orbiting around the earth would be like floating guns ready to strike at an aggressor. It needs to be emphasized that a satellite deployed to destroy an incoming ICBM at an incipient stage also has the potential to be used as an offensive weapon.

An ERIS reentry vehicle interceptor undergoing tests on Meck Island in the mid Pacific, 1991.

Limiting interception of an incoming ICBM to the midcourse and terminal phases does not negate the notion of an astrodome defense. The weapons in space, over the potential target country's territory, would be intercepting an incoming ICBM from any direction. However, it is true that limiting interception to the last two stages of a missile's trajectory decreases the chances of a full-proof defense.

is true that limiting interception to the last two stages of a missile's trajectory decreases the chances of a full-proof defense. While a full-proof defense is desirable, its realization is far from reality.[29]

Zbigniew Brzezinski, national security adviser during the Carter administration, points to a two-layered defense that is expected to destroy 90 percent of incoming ICBMs.[30] The three-layered defense of High Frontier predicts destruction of 96 percent of incoming ICBMs.[31] Even Ronald Reagan's four-layered defense does not claim to ensure total protection.[32]

The key objective of deterrence is prevention of an actual attack.[33] The essential mechanism is the threat of unacceptable retaliatory damage to the potential aggressor by the victim in the event of an initial attack by the aggressor.[34] This ability to retaliate, known as the second-strike capability, is the central plank of nuclear deterrence under a MAD scenario. One can deduce from the original definition stated by Robert S. McNamara, secretary of defense during the Kennedy and Johnson administrations, that the MAD doctrine does not assume 100 percent effectiveness in inflicting damage by the projected missiles.[35] Similarly, an effective deterrence under a MAS scenario need not be 100 percent effective in defending against incoming missiles. (Some scholars hold that deterrence warrants a 100 percent effective astrodome defense.)[36]

What is crucial for an effective deterrence is that no country have a first-strike capability.[37] If one superpower has a first-strike capability, the other superpower does not have an effective second-strike capability.[38] For a stable deterrence, a first-strike capability and a second-strike capability are mutually exclusive.

A country with a first-strike capability would be tempted to destroy its adversary's retaliatory capabilities; such a scenario is destabilizing.[39] However, the *perception* of an adversary *reaching* a first-strike capability would be no less destabilizing. Boost and postboost phase interception goals by a country would be misperceived by an adversary as a drive toward a first-strike capability. Limiting a BMD system to the midcourse and terminal phases would avoid such a destabilizing scenario.

The Future

The SDI is a transitional phase that promises to herald a defense-dominant era of mutual survival of the superpowers. In ensuring a defensive

shield around a country, an astrodome defense is expected to frustrate any adventurism by an aggressor. However, as a country's BMD system develops the capability to intercept incoming ICBMs closer to the aggressor, such a capability will be misperceived by the aggressor as giving the adversary a first-strike capability. In particular, boost and postboost phase interceptions will be misperceived as giving a country with such technologies a first-strike capability against the adversary.

Consequently, a transitional phase from a scenario of MAD to one of MAS must avoid boost and postboost phase interceptions. To ensure deterrence stability, the SDI must be limited to an astrodome defense comprising the midcourse and terminal phases. Such a limited objective, in overcoming any misperception of striving for a first-strike capability, will avoid destabilizing superpower nuclear deterrence during the uncertain transitional period. ***MR***

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OPERATION FORTITUDE

The Story of Deception

Major James R. Koch, US Army

A key to winning a war is making one's enemy do something he does not want to do, thus giving you a clear advantage. The author presents a brief description of deception in its current doctrine. He then reviews and provides a historical analysis of Operation* Bodyguard*, one of the most successful deception operations in modern warfare. Finally, the author looks at the lessons learned from this operation and how they can be applied to our current doctrine.

In war time, truth is so precious that she should always be attended by a bodyguard of lies.
—Winston Churchill

IT HAS been said that the art of deception has made the difference in a great number of battles, operations and campaigns. It has also been said that deception is a tool used by the weak to further enhance their chances of success in their operations. If we accept these statements as true, it follows that the US Army, in its employment of AirLand Battle doctrine, should use deception in every form to achieve success on the modern battlefield.

But the Army is only now fielding the means to make use of battlefield deception. The deception cells at corps and division and the newly revised US Army Field Manual (FM) 90–2, *Battlefield Deception*, are the first steps in making this important tool a practical part of our doctrinal approach to warfighting.

Through this article and the historical analysis of one of the most, if not the most, successful deception operations in the history of warfare, I intend to draw a number of conclusions concerning deception operations and their appropriate place in our current doctrine. However, in order to facilitate that analysis, it is necessary to present a brief description of the concept of deception as it currently exists in our doctrine.

Deception

Perhaps the greatest error a deception planner can make is to devise a plan designed to make his enemy *think* something; deception must be geared to make the enemy *do* something, to take some action, preferably one which will dispose his forces unfavorably when compared to our own. It can even be designed to force the enemy into taking no action as the historic example to follow will illustrate. Joint Publication 1, *Joint Warfare of the Armed Forces*, recognizes that action on the part of the enemy is the desired outcome of deception operations. This desired outcome is the first of the five components of battlefield deception listed in FM 90–2. It is characterized simply as "objectives." The remaining four components are target, story, plan and events.[1] A brief description of each follows.

Target. The person on the enemy side who is in a position to make the decision required to effect the action stated in the objective. The more that is known by our intelligence assets about the target, the easier it will be to tailor actions to accomplish the objective.

Story. The friendly capability or intention that our deception effort is attempting to make the enemy believe. Above all, the story must be plausible. If we attempt to pass off a story that is beyond our capabilities, not within established patterns of behavior or not on sound tactical, operational or strategic grounds, the enemy will simply disregard the indicators he receives. An even worse scenario would have the enemy discern our true intentions as a result of being able to discard the false indicators.

Plan. The outlines of specific actions or operations, including operations security, which must be taken to convey the story to the enemy. Here careful consideration must be taken to ensure gaps are not left that would cause the enemy to doubt the story. The creation of the plan takes time to allow for its drafting and dissemination and to ensure that it is accomplished properly.

Events. The friendly actions that will portray the story to the enemy through his intelligence collection sensors. Here, again, knowledge of the enemy is important; the deception planner must be aware of the trust the enemy places in a particular sensor. A properly portrayed story may not be accepted by the enemy if he does not put great stock in the value of the sensor relaying the information to him. This component requires attention to detail in view of the fact that it is the execution phase of the operation. One bad action or one missed event could cast doubt on the entire story.

The foregoing discussion is the essence of deception theory today, but I intend to show this theory applies equally well in retrospect. The deception operation conducted in conjunction with Operation *Overlord* in 1944 will be the vehicle I use to illustrate this. I will carry it from the strategic level, viewing the situation in Europe as a whole; through the operational level, paying particular emphasis to the plan for the cover of the invasion force; to the tactical level, describing the actions taken to protect components of the invasion force. We will see both successes and failures and will examine some of the reasons for each.

Strategic Setting

The situation in late 1943 was not favorable for the Germans. They had suffered setbacks in Africa, Sicily and Russia. The North Atlantic was no longer their own, and Germany itself had suffered under the pounding of Allied bombers.

The [plan] outlines . . . specific actions or operations, including operations security, which must be taken to convey the story to the enemy. Here careful consideration must be taken to ensure gaps are not left that would cause the enemy to doubt the story. The creation of the plan takes time . . . to ensure that it is accomplished properly.

The German High Command (OKW) envisaged the invasion of France. And the questions on everybody's mind were when, where and in what strength will the enemy attack? That is the same priority intelligence requirement we pose today; the deception planners at Supreme Headquarters, Allied Expeditionary Force (SHAEF) began to answer the question for the Germans.

The planners realized that if the forces opposing the landings, wherever they took place, were rapidly reinforced, the landings were in jeopardy, and the cross-channel attack would have to be put off for an extended period of time. The failed invasion would allow the Germans to shift forces from the Atlantic, Balkans and Scandinavia to the Russian Front because of a reduced threat in those areas. Therefore, in the mind of Lieutenant General Frederick E. Morgan, acting chief of staff to commander, SHAEF, the crux of the problem was to hold reinforcements in place throughout Europe, denying them the opportunity to act.[2] Morgan further suggested that the plan, whatever it was, should not cover our weaknesses but play up our strengths, making the Germans believe that a huge force was poised for the attack. Colonel John Bevan, chief, London Controlling Section (LCS), the organization entrusted with deception planning, believed

Wehrmacht soldiers peacefully tending their bunker–top vegetable garden high above a Norwegian fiord Thanks largely to a highly successful series of deception operations, almost 240,000 German troops sat out most of World War II in Scandinavia.

If the forces opposing the landings . . . were rapidly reinforced, the . . . cross–channel attack would have to be put off for an extended period of time. The failed invasion would allow the Germans to shift forces from the Atlantic, Balkans and Scandinavia to the Russian Front. . . . The overall plan should not threaten the Germans with invasion everywhere at once but rather make them believe that they might be attacked somewhere in addition to the cross–channel attack.

that the proper action in this case was to show the maximum plausible strength to the enemy, and no more. Morgan further emphasized that the overall plan should not threaten the Germans with invasion everywhere at once but rather make them believe that they might be attacked somewhere in addition to the cross–channel attack, the preparations for which could not be hidden. This would deny the Germans the ability to move forces around Europe to meet the pending invasion.[3] This was the beginning of what would come to be known as Operation *Bodyguard*.

This operation consisted of multiple parts designed to portray such a threat and tie forces down. These subordinate parts were:

- *Fortitude North*, aimed at Scandinavia.
- *Fortitude South*, aimed at the Pas–de–Calais.
- *Zeppelin*, aimed at the eastern Mediterranean and the Balkan States.
- *Ironside*, *Vendetta* and *Ferdinand*, aimed at the western Mediterranean and Atlantic coast of France.

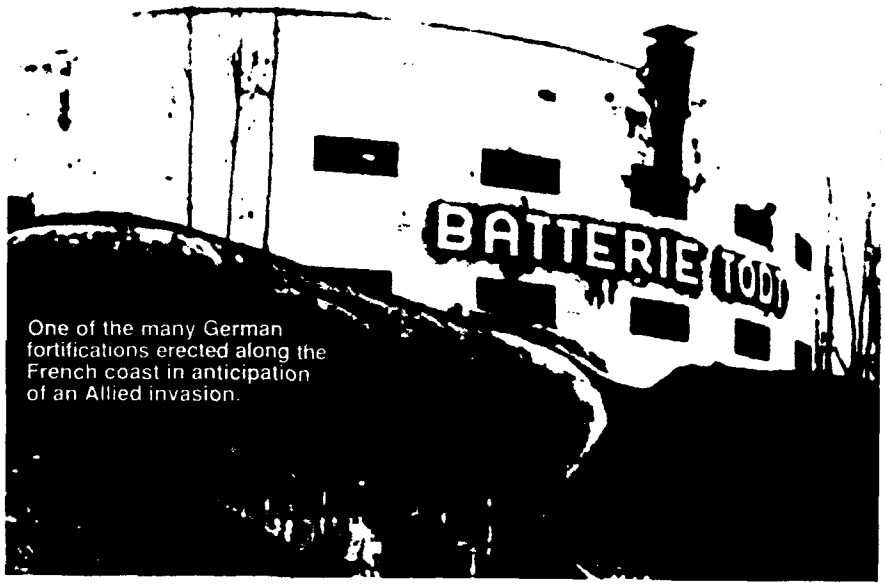
These operations would be supported by other nonmilitary deception schemes: two diplomatic and one designed to place General Sir Bernard L. Montgomery in the Mediterranean on the eve of the actual invasion, thereby allaying the fear of a cross–channel attack.[4] The deceptions were designed to cover the *Overlord* landings *Neptune* and *Anvil*, the landing in southern France, later renamed *Dragoon*. (Initially, *Anvil* was to be a diversion for *Overlord*, which would go forward if unopposed, but Churchill discounted the value of a diversion occurring 500 miles away from the main force and decoupled the two operations.)[5]

The timing of the invasion also had to be portrayed in such a fashion as to make the Germans believe that the attack would come late in the summer. One such scheme was to portray the Allied bomber offensive as being so effective in the minds of SHAEF planners that it would be given priority over ground troops for sustainment. This notion was designed to plant the idea that the ground troops could not be ready for an invasion until late summer. The timing on this deception was important; it was not to be implemented until it was clear to the Germans that the attack was to occur cross–channel. The fear of attacks in other places had to remain, but the Germans needed to be kept confused as to the exact location of the cross–channel attack.[6] With this

serving as background, I can now discuss *Fortitude South*, the deception portraying that the true cross-channel attack would come on the Pas-de-Calais.

Operational Plans

Fortitude South was a classic double-bluff deception in which the real attack was made to appear as a diversion, and the diversion made to appear real.[7] The objective, as discussed earlier, was to hold reserves in place and prevent reinforcement of the invasion area. In this case, the reserves in question were the German *Fifteenth Army* located in the Pas-de-Calais. The deception story was that the Normandy landings were a feint designed to draw the armor south, away from the Calais-Boulogne area, in order that the main invasion could be established in the Calais area.[8] The target of this grand scheme was none less than the OKW. Ultimately, Adolf Hitler himself would play heavily in the deception.



One of the many German fortifications erected along the French coast in anticipation of an Allied invasion.

The fear of attacks in other places had to remain, but the Germans needed to be kept confused as to the exact location of the cross-channel attack. . . . The deception story was that the Normandy landings were a feint designed to draw the armor south, away from the Calais-Boulogne area, in order that the main invasion could be established in the Calais area.

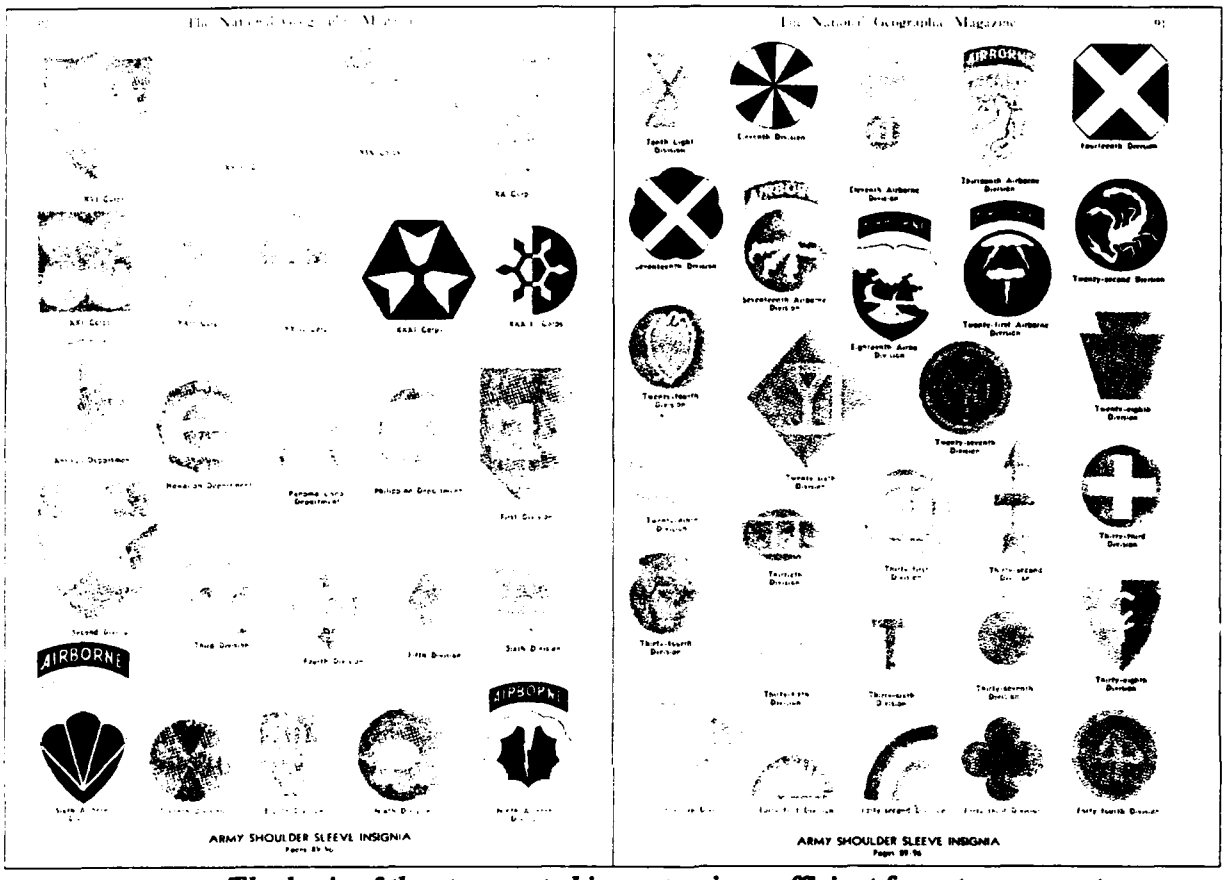
Several factors made the deception possible. The first of these was *Ultra*, the British cryptologic effort that made SHAEF privy to some of the highest communications of the German Reich. The other major factor was the "XX (Double Cross) Committee." Double Cross made use of some 20 double agents, identified early in the war and "turned" by British intelligence. Some of these agents had created huge notional agent nets, allowing them to pass information ostensibly obtained from all over Allied territory. The fact that some of these agents were believed to be of the highest reliability by OKW made it extremely easy for LCS to pass the deception to the Germans.

What made the story particularly believable to OKW was the terrain associated with the Pas-de-Calais. It was the closest to England, providing the shortest invasion route. It provided the most direct route to the Ruhr, the industrial heart of Germany and the anticipated objective of any invasion. The area boasted an excellent road and rail network to the interior, and finally, the port of Le Havre, France, would provide the Allies with a superb facility to sustain any drive on the Continent. The Germans believed that once the Allies had a foothold on the Continent, they would be able to rapidly build up their forces for the advance. The Pas-de-Calais seemed the natural choice.[9]

During the course of the planning, SHAEF considered, then rejected, a feint invasion against the Pas-de-Calais area. It was reasoned that, if the feint were staged, the Germans would soon realize it was not strong enough to be the real invasion, and they would begin to shift forces to meet the threat at Normandy. This would defeat the purpose of the deception. The story would be over by D-day.[10] The plan was designed to last until D+14.[11]

The basis of the story rested in portraying sufficient force to carry out both a feint on Normandy and a main attack on the Pas-de-Calais.

Fortitude's far-reaching deception even included the august pages of *The National Geographic*, which published the patches of 24 nonexistent divisions and corps. In order to reinforce German perceptions of US reliance on airpower, almost a quarter of the 22 bogus divisions were airborne formations. Copies of *National Geographic* were sent to Germany by agents working in the embassies of neutral nations and the full color unit symbols made their way to the *Wehrmacht's* US Army order of battle charts in Paris. Highlighted items below are some of those patches.



The basis of the story rested in portraying sufficient force to carry out both a feint on Normandy and a main attack on the Pas-de-Calais.* Ultra *provided the first insight that this was possible; through* Ultra, *SHAEF verified that the Germans consistently overestimated Allied strength. Armed with that information, a dummy order of battle, consistent with Allied capabilities for mobilization of such a force, was portrayed to the Germans.

Ultra provided the first insight that this was possible; through *Ultra*, SHAEF verified that the Germans consistently overestimated Allied strength.[12] Armed with that information, a dummy order of battle (OB), consistent with Allied capabilities for mobilization of such a force, was portrayed to the Germans through the Double Cross system. *Ultra* verified that the bait was taken.

Within the German intelligence system, Colonel von Roenne, head of *Fremde Heere West*, accepted the *Fortitude South* OB. He reported these numbers to OKW, but because of the recent decline in the credibility of the *Abwehr*, the numbers passed through the *Sicherheitsdienst (SD)*. There the OB numbers were routinely halved, bringing them closer to the truth. In order to get around this, he and several members of his staff conspired to double the numbers reported to OKW, recognizing the danger that they might not be halved at *SD*, and a faulty OB would be portrayed. And as it

A series of dummy encampments deluded German reconnaissance and dummy wireless traffic was transmitted for the benefit of German signals intelligence units. The phony unit . . . was quartered in southeastern England. It was a mixture of real and notional units, as are most deception OBs. The real invasion force was quartered farther west in the vicinity of Portsmouth. Concealment of the camps in the west was . . . of paramount importance, while camps in the east, portraying notional units, were not adequately camouflaged. . . . They were believably positioned [and] their existence [was] accepted by German intelligence.

turned out, they were not halved.[13] The Germans put Allied OB at 85 to 90 divisions, plus seven airborne divisions; the actual figures were 35 divisions, plus three airborne divisions.[14] Field Marshall Erwin Rommel's staff at *Army Group B* predicted a landing of 35 divisions, though they too were taken in by *Fortitude*.[15] The false OB was now in the minds of OKW staffers, and more important, Hitler.[16]

With such an OB, it became necessary to present the illusion of troops preparing for the invasion. A series of dummy encampments deluded German reconnaissance and dummy wireless traffic was transmitted for the benefit of German signals intelligence units. The phony unit, First US Army Group (FUSAG), under command of Lieutenant General George S. Patton Jr., was quartered in southeastern England. It was a mixture of real and notional units, as are most deception OBs. The real invasion force was quartered farther west in the vicinity of Portsmouth. Concealment of the camps in the west was, in the interests of security, of paramount importance, while camps in the east, portraying notional units, were not adequately camouflaged. It was felt that as long as they were believably positioned, their existence would be accepted by German intelligence.[17]

Quicksilver

The six main elements of the *Fortitude South* deception were collectively titled *Quicksilver*.[18]

The deception story of the main invasion occurring on the Pas-de-Calais was code-named *Quicksilver I*. It was supported by the OB and the quartering plan described previously. *Quicksilver II* was the wireless deception through which the phoney FUSAG was made believable. The signals were handled by the US 3103d Signals Service Battalion. *Quicksilver III* was the visual display of dummy landing craft on the eastern and southeastern coasts of England. These were necessary to portray the craft that would carry FUSAG to the Pas-de-Calais. *Quicksilver IV* was an intensive bombing campaign against the beaches on the Pas-de-Calais and the communications of the region. These were intended to give the impression that the area was being softened up prior to the invasion. In conjunction with *Quicksilver IV*, the bombing of the transportation system reinforced this belief.[19] Attacks in the Normandy region were lightened as the Pas de Calais bombing intensified. *Quicksilver V* was an increase in radio nodes just prior to the invasion to give the impression of intensified preparations. There was also a general increase in the bustle in the area to further this belief. Finally, *Quicksilver VI* was a decoy lighting scheme to draw off any night bombing attempts from actual formations. The displays were set up in the east to convince the enemy that large troop concentrations were billeted there.

Troops were sealed in the marshaling areas and guarded by 2,000 counterintelligence corpsmen. British counterintelligence agents were used in the operation because, from the beginning, the Americans were not convinced that the deception was worth the effort.

A tremendous degree of detail went into the *Quicksilver* effort. Radio signals were carried from Montgomery's headquarters outside of Portsmouth via landline to Kent and were broadcast from there. Flotillas of dummy landing craft were emplaced at anchor for two weeks before and after D-day to give the impression that the Normandy attack was a feint. All of this was aimed at keeping the illusion alive.[20]

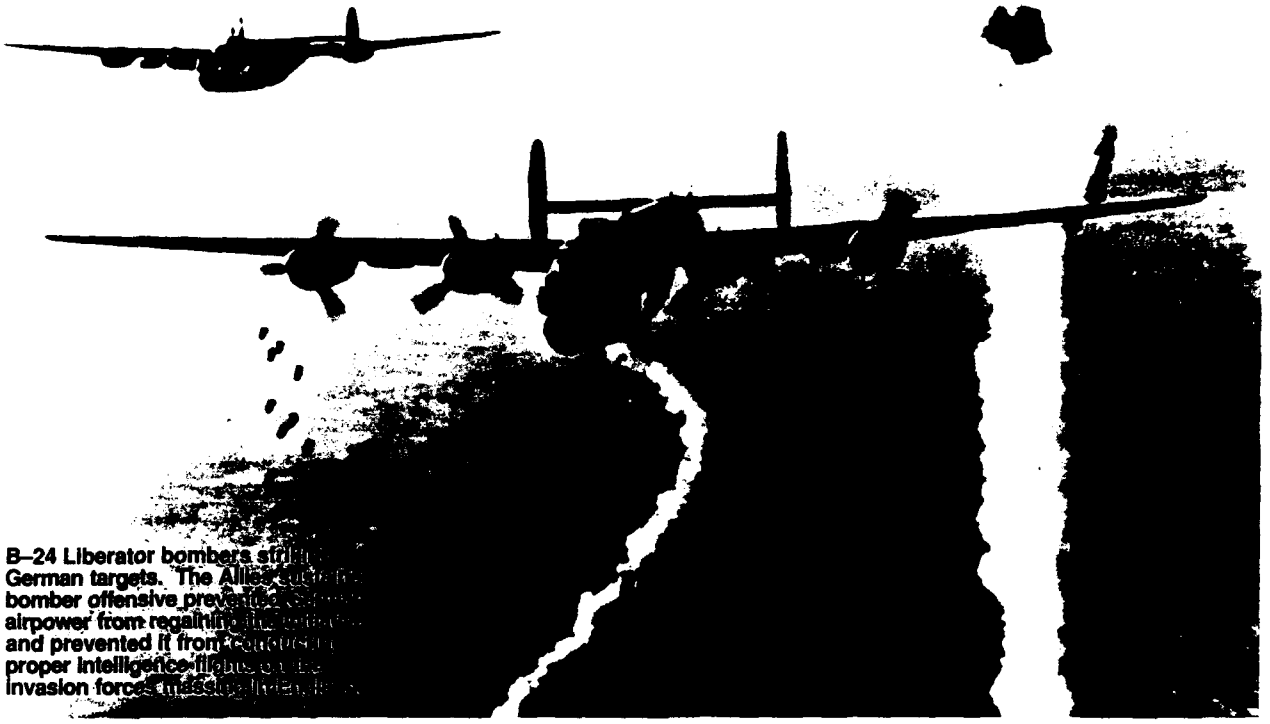
A number of passive measures were taken to ensure the security of the operation. Troops were sealed in the marshaling areas and guarded by 2,000 counterintelligence corpsmen.[21] British counterintelligence agents were used in the operation because, from the beginning, the Americans were not convinced that the deception was worth the effort.[22] It is interesting to note that the closure of the strip containing FUSAG was anything but complete. Even though it was closed from 1 April through 25 August, there were so many exceptions to the rules that any enemy agent could have penetrated the curtain.[23] The fact that this did not happen is probably attributable to British intelligence's early roundup of German agents on the island and the fact that an island nation is much harder to penetrate, especially when it is looking for such a penetration.

One final factor can be identified as contributing to the success of the plan—the enemy's decided lack of aerial reconnaissance. Because of the virtually complete Allied domination of the skies, the Germans could not perform the type of reconnaissance necessary to verify all that they were being fed through *Quicksilver*. Any serious reconnaissance effort may have provided enough information to cast a shadow of doubt over the "truth" as it was known in OKW because of the troubles experienced with the dummy visual deceptions.[24]

The Invasion

Through *Ultra*, SHAEF planners knew that *Fortitude South* was firmly implanted in the minds of the decision makers of the Reich. The idea was bought; all that remained was for them to take action on what they saw and what they thought was going to happen. D-day was 6 June 1944.

Based on the pattern of landings of paratroopers, Generalmajor Max Pemsel, *Seventh Army* chief of staff, correctly concluded by 0300 that the invasion had begun and pinpointed the



B–24 Liberator bombers str
German targets. The Allie
bomber offensive preven
airpower from regaining
and prevented it from
proper intelligence
invasion force

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main efforts near Carentan and Caen, France. While others in the command believed that this was the expected diversion, all took local action to counter the invasion.[25] When the landings unfolded later that morning, *Seventh Army* began asking for reinforcements to repel the invasion. As the requests and meager information arrived at OKW, staffers decided it was not of sufficient importance to wake either General der Artillerie Alfred Jodl or Hitler. When Jodl was finally informed, he too decided that Hitler was not to be disturbed.[26] This was the diversion, and no action was to be taken on the requests for reinforcements. *Fortitude South* had worked.

As the invasion mounted pressure on *Seventh Army*, doubts began to infest OKW. Continuous requests for aid began to make an impression, and on D+2, a decision was made to release several *Fifteenth Army* units to counter the invasion. At the same time, the Double Cross system was going into action to reinforce the previously held beliefs and dispel any notions that Normandy was the real thing. One of the most, if not the most, trusted German agents, "Arabel," radioed that, in his opinion, this was only a diversion. Arabel was actually a double agent working for the British under the code name "Garbo." The transmission began at 0007 on 9 June to his controller in Madrid. By 1000 a summary was in the hands of Hitler, and he canceled the movement orders for units of the *Fifteenth*. At 0730 on 10 June, Field Marshal Gerd von Rundstedt canceled the orders based on a phone call from Field Marshal Wilhelm Keitel at OKW and put the *Fifteenth Army* on second–degree alert in northern France and Belgium.[27]

As units in FUSAG began to appear on the beachhead and were noted on German OB charts, the discrepancies were apparent. However, the difficulty the invasion force had in breaking out of the beachhead only served to reinforce in the minds of the Germans that these were "second rate" units put into the diversion.[28] This actually served to strengthen the credibility of the Double Cross agents. It points up the fact that the Germans were thoroughly conditioned

to believe in *Fortitude*, and information to the contrary arriving from the field was explained away in any fashion possible.

By mid–July, there were 30 Allied divisions ashore and 22 German divisions sitting in the Pas–de–Calais. Very few *Fifteenth Army* units had been released. It was not until the first week in August that *Bodyguard* finally unraveled. By that time, Patton was commander of Third US Army and making history. *Bodyguard* caused the Germans to piecemeal the employment of their units into the battle, which gave the Allies the foothold they required to wage the war.[29]

In Scandinavia, 18 divisions remained in place.... Whether* Fortitude North *was responsible for this is a matter of debate today, but the fact is the divisions did not move. Units were not shifted out of the Balkans; the Germans genuinely feared a limited assault there. The war in Italy continued in all its fury. And most significantly, no units were moved from the Pas–de–Calais until well after the invasion.

Tactical Deception

The deception effort would not have been complete without some tactical deception to aid the individual soldier in his fight. As the airborne invasion began, a diversion was staged southwest of Caen. Approximately 500 dummy paratroopers, one third actual size, were dropped on several areas. They contained noise simulators that activated on impact, sounding like grenades, mortars and small arms fire. Also dropped were pin lights, designed to give the appearance of lighting up the drop zone. Some Special Air Service troops dropped among the dummies to continue on their own missions. The effect that these had was to elicit a response from the German defenders, who found out that they were counterattacking dummies. Reports of these landings reached unit headquarters as did reports of the widely scattered American drops behind Utah Beach. Combined, these reports served to confuse the enemy as to what was real and what was not. The intended effect was a paralysis of action.[30]

Across from the Pas–de–Calais, chaff, to create a window, was dropped from aircraft to simulate an invasion fleet on German radars. By varying the amount and size of the window, the radar return depicted different things. The effects of this deception are not known, but since the invasion did not materialize, any effects would have been short–lived.[31] In addition to this deception, *Filbert*, radar reflecting balloons and *Moonshine*, electronic pulse amplification and return devices, were also employed. These were assessed as having virtually no impact.[32]

Finally, as the fighting progressed on the Cotentin Peninsula in an effort to reach Cherbourg, a hastily prepared effort, code–named *Accumulator*, was prepared and implemented, designed to make the enemy think another amphibious assault was being mounted in the Granville area. The aim was to divert enemy troops from the peninsula to defend against this assault. The operation involved simulation of a landing force by the Canadian destroyers Haida and Huron. The plan was for one to "develop" engine trouble, which would slow down the "convoy" and "delay the landing." This problem was to be radioed back to base in order that German signals intelligence units could intercept it and track the action. The parts were scripted well, but the radio gear on the Haida went bad, and the Huron had to carry on alone after some hasty rescripting. In addition, an Allied reconnaissance aircraft flying over the area reported "two unidentified warships" to its headquarters. This, undoubtedly, was picked up by the Germans also. Whatever the reason, there was no reaction on the part of the Germans, and the deception failed. Either they smelled a deception based on the Huron's transmissions, picked up the reconnaissance aircraft's transmission, or they did not hear anything. In any case, they failed to act as desired.[33] This points out the fact that operations of this nature need a long lead time and cannot be hastily mounted. The inability to coordinate

As units in FUSAG began to appear on the beachhead and were noted on German OB charts, the discrepancies were apparent. However, the difficulty the invasion force had in breaking out of the beachhead only served to reinforce in the minds of the Germans that these were "second rate" units put into the diversion. This actually served to strengthen the credibility of the Double Cross agents.

with all elements, including the reconnaissance in the area, may have spoiled the plot.

Effects and Lessons Learned

In the short term, the *Bodyguard* deception tied German forces in place, which allowed the invasion at Normandy to succeed. In Scandinavia, 18 divisions remained in place; in Norway, 12; and in Denmark, six.[34] Whether *Fortitude North* was responsible for this is a matter of debate today, but the fact is the divisions did not move. Units were not shifted out of the Balkans; the Germans genuinely feared a limited assault there.[35] The war in Italy continued in all its fury. And most significantly, no units were moved from the Pas-de-Calais until well after the invasion. This greatly enhanced the chances of successfully mounting the *Overlord Campaign*.

In the long term, this operation probably shortened the war considerably. It can be debated that if *Bodyguard* had not worked, the invasion may not have succeeded. What is indisputable though is the fact that if it had not worked, the forces of the *Fifteenth Army* would have been brought to bear against the Allies, and the fight in Normandy would have been much more difficult.

There are several points that can be derived from this for today and the future. The first is that deception works. If employed properly and with care, a deception will be invisible to the enemy. This requires an in-depth knowledge of enemy capabilities and limitations; but with this knowledge, the other side can be told exactly what it wants to know, and it will act accordingly. A note of caution here; some excellent deception activities may produce no action. The outcome can never be accurately predicted, so branches of the plan must include this possibility.

Next, the effectiveness of deception is difficult to measure. The clearest case for deception is the one just examined in the historical context, but even that engenders debate. For this reason, some Americans remained unconvinced and were unwilling to fully endorse the effort during World War II.[36] We must never allow ourselves

Deception is a tool of the commander, not the intelligence system. It must be integrated into the scheme of maneuver and be planned concurrently. ... Deception fits into AirLand Operations doctrine as a means of achieving agility on the battlefield and taking the initiative in the offense. Additionally, in the defense, it may be the means to influence the enemy's execution cycle, forcing him to do something before he plans it, thereby wresting the initiative from him.

to fall into that trap again. We must not be overconfident in our own abilities; we may need every trick in the book for the next conflict. The measure of success cannot be quantified, but it is drawn in lives—and deception is an inexpensive way of saving those lives. It is a combat multiplier for the maneuver forces just as surely as fire support is.

Deception is a tool of the commander, not the intelligence system. It must be integrated into the scheme of maneuver and be planned concurrently. In this way, the enemy can be made to do something, not just think something. Action is the goal, and the proposed action must have the blessing of the commander. This must be approached from the point of unity of command. During World War II, the LCS did not own the assets that carried out the deception; but because it was planned at SHAEF, it accomplished the mission. Deception planners must be used, not simply shuttled off into a corner. Recognizing that deception uses assets, the commander must be prepared to commit scarce resources to the effort, including combat forces when required.

We must know what the enemy relies on for intelligence. During World War II, the Allies had *Ultra* and Double Cross; those luxuries no longer exist, so feedback will be much more difficult to obtain. In the future, intelligence sensors may provide the only indication of whether the enemy is taking the bait. Deception takes time. For this reason, it may never again be possible to set up a strategic deception along the lines of *Bodyguard*. Planning for that operation began in July 1943 and went through many changes before it reached its final form.

In the future, the strategic and political deception will most likely occur *before* the conflict, with tactical deception occurring throughout. A major question is whether there will be enough time to develop operational–level deception in order to influence a front commander's decision or execution cycle.

We must keep our guard up, using multiple sources of information, and not allow the intelligence community to be conditioned by seeing what it wants to see. It should question everything and always take a fresh look at the big picture, expecting the enemy to use deception at all levels of war.

Again on the defensive side, we must recognize that the intelligence officer, if pushed early for a "best estimate," is very likely to make an error in judgment. He may be suffering from conditioning by the enemy, or he simply may not have enough information. But the more pressure he faces or the earlier he is forced to make a decision, the greater are his chances for error.

Finally, deception fits into AirLand Operations doctrine as a means of achieving agility on the battlefield and taking the initiative in the offense. Additionally, in the defense, it may be the means to influence the enemy's execution cycle, forcing him to do something before he plans it, thereby wresting the initiative from him. But when applying deception doctrine, the planners must be extremely careful to ensure that all plans are centrally coordinated with higher authority. *Bodyguard* makes an excellent case for centralization of deception activities to ensure there are no unwanted side effects; the current version of FM 90–2 is not as clear on that point.[37] FM 90–2 should not be viewed as a tactical–level deception document as it sometimes is. It must be viewed within the framework of the strategic, operational and tactical battlefields. Only in that way, can deception lead to operational and strategic victories; and if we win those battles, we win the war. The Soviets learned that lesson

many times during World War II, and that experience should not be lost on us.

Deception is as current now as it was thousands of years ago. The means may have changed, but the principles remain the same. It can be applied in low-intensity conflict, as well as on the central front in Europe; the key is knowing the sophistication of the enemy and ensuring that what he sees is not too easy or too hard to collect—he must believe it, to act on it.

After all, you must make careful plans before you fight a battle, and the more good advice you get, the more likely you are to win. Proverbs 24:6

NOTES

1. US Department of the Army Field Manual (FM) 90-2, *Battlefield Deception*, Final Draft, (Washington, DC: US Government Printing Office), 1-65 and 1-66.
2. Max Hastings, *OVERLORD: D-Day and the Battle for Normandy* (New York: Simon and Schuster, 1984), 27.
3. Charles G. Cruickshank, *Deception in World War II* (New York: Oxford University Press, 1980), 87-88.
4. Ibid., 96.
5. Gordon A. Harrison, *US Army in World War II, The European Theater of Operations, Cross-Channel Attack* (Washington, DC: Office of the Chief of Military History, 1951), 168.
6. Cruickshank, 93.
7. Michael I. Handel, lecture on the theory of deception presented 11 February 1988 to US Army Command and General Staff Officer Course A399, Advanced Warfighting.
8. Dennis Wheatley, *The Deception Planners: My Secret War* (London: Hutchinson and Company Ltd., 1980), 172.
9. Roland G. Ruppenthal, *Utah Beach to Cherbourg* (Washington, DC: Center of Military History, US Army, 1984), 57.
10. Hastings, 28.
11. Harrison, 76.
12. Handel.
13. Anthony Cave Brown, *Bodyguard of Lies* (New York: Harper and Row, 1975), 498.
14. Ronald Lewin, *ULTRA Goes to War* (New York: Pocket Books, 1980), 379.
15. Hastings, 62.
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17. Cruickshank, 177.
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19. Handel.
20. Guy Hartcup, *Camouflage: A History of Concealment and Deception in War* (New York: Charles Scribner's Sons, 1980), 88-89.
21. Harrison, 270.
22. Hastings, 60.
23. Cruickshank, 173.
24. Ibid., 187.
25. Harrison, 278.
26. Cave Brown, 659-60.
27. Lewin, 381; and David Mure, *Master of Deception: Tangled Webs in London and the Middle East* (London: William Kimber and Company, Ltd., 1980), 254.
28. Lewin, 378.
29. Wheatley, 214-15.
30. Hartcup, 90-91.
31. Ibid., 90.
32. Cruickshank, 199-200.
33. Ibid.
34. Ibid., 112-13.
35. Ibid., 155.
36. Mure, 220.
37. FM 90-2 does direct that subordinate plans need to be approved by higher headquarters, but the picture that the tactical plan is a derivative of the operational-level plan, which, in turn, is derived from the strategic plan, is not as clear. Without that linkage, tactical-level deception efforts may upset higher plans, the "Monkey's Paw" effect described in FM 90-2.

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MR INSIGHTS

Military Force: Preparing for the Future

By Lieutenant Colonel James M. Dubik, US Army

In *A Treatise of Human Nature*, the 18th century Scottish philosopher David Hume challenged the assumption that the future resembles the past. This assumption, he claimed, is "not founded on arguments of any kind but is deriv'd entirely from habit by which we are determin'd to expect for the future the same train of objects to which we have been accustom'd."[1] His advice: Be wary of this assumption. Given the rapidity of change in which the US Army must work—both international and domestic—no advice could be more appropriate for contemporary strategists.

The Soviet Union, the United States' Cold War "Moriarty," no longer poses the threat to our security that it has over the last 45 years. The Warsaw Pact threat to European security is also gone. The probability of world war is too low to measure. Real reductions in the numbers and types of nuclear weapons held by the United States and the former Soviet Union are finally occurring. The Cold War strategies of containment and deterrence have been so successful that they have lost their foundation. Only regional threats remain, but even these may be less threatening than before to vital US interests in these regions, given the display of military prowess in the Gulf War.

Unfortunately, along with these positive developments on the international front, negative ones

appear on the home front. A precarious economy, seemingly unable to shake stagnation; a growing federal budget deficit and the requirement to bail out scandalous savings and loan failures; a deteriorating public school system and abysmal education standards; a drug abuse epidemic, with the resultant erosion of social norms, disregard for decent and humane social interactions and disrespect for democratic institutions; an expanding number of homeless citizens; a health care system on the brink of bankruptcy; and a distrust of politicians who, for whatever reasons, seem unwilling to face, and therefore are impotent to solve, domestic problems—these are the issues that the upcoming presidential election is sure to bring to the foreground.

In this international and domestic context, the American people are beginning to demand, quite rightly, that political leaders make domestic issues the nation's main effort. Thus, Congress and the administration, having already reduced both the budget and the size of the Armed Forces, will begin looking for more ways to cut public spending. The Department of Defense will be seen to provide a ready target for two reasons: the external threats to vital US interests are reduced; and except for local communities near military installations and industries related to military equipment or research, the active duty Armed Forces has no politically significant constituency. Given the international and domestic context, the problem for national security strategists is how to explain why the United States needs a viable military force capable of global reach. The following views will present one approach to such an explanation and highlight the Total Army's role.

Unfortunately, some pseudostrategists already have adduced embarrassingly parochial arguments akin to those that marked the post–World War II military, created more fighting among the services than they have contributed to national defense and, thereby, devastated the nation's ability to tailor an Armed Forces to fit any specific situation. The "one service or one weapon does all" claim of the pseudostrategist, like the "one potion cures all" claims of the unscrupulous quack, is more jingo than solution. To build the case for a US military force in being requires that strategists take a careful, studied approach, and the firmest start point for developing this case seems to be the identification of the US Armed Forces' raison d'etre to "provide for the common defense." That is, the US military forces' ultimate purpose is to maintain the territorial integrity and political sovereignty of our nation.

Providing for the US territorial integrity and political sovereignty is complicated. We choose to be proactive in our defense. Ours is a strategy that seeks to take action outside our country, thus precluding direct threats to US borders and sovereignty. This kind of strategy is more necessary than ever before because, while international conventions describe a nation's geographic borders, economic and fiscal borders are not as distinct. In the 21st century, they will be even less distinct, for the global marketplace and a shrinking world essentially link our political sovereignty and economic viability to events abroad. Finally, like it or not, the United States is the Free World's leader, and this leadership brings responsibilities other nations simply do not have. Furthermore, these responsibilities are directly tied to our national interests and defense.

Thus, in meeting its raison d'etre, US Armed Forces should promote democratic values at home and abroad; protect American citizens and the nation's economic growth; prevent war and hostilities short of war from occurring; and win its battles and campaigns when employed. The explanation of why the United States needs, now and in the future, a force in being lies in the understanding of these four requirements.

Promote Democratic Values

Each year, the services return thousands of citizens to civilian life. These reintegrated citizens are conduits of democratic values. They have practiced service to the nation, duty, self–sacrifice and self–discipline. They have respected legitimate authority and fulfilled their obligation to the common good. These citizens understand that "we the people" are those who provide for the common defense. The values that the "citizens–once–soldiers" exhibit are those upon which our nation was founded and those that are still required to maintain US democracy.

While each service is similar in its ability to return solid citizens to civilian life, the services differ in how they promote democratic values abroad. The US Navy's reach extends primarily to ports and coastal areas. The US Air Force's is primarily to airfields and the surrounding communities. The Marine Corps is an expeditionary force; its presence connotes a short–term US commitment. Even when the US Marine Corps or the Air Force deploy to the interior of a nation, its presence differs from the Army's. The Air Force flies in, then flies out. The signal of commitment that its presence sends lasts only as long as it is on the ground. Although these are important contributions, the desire to promote American values abroad requires military forces capable of a reach greater than that of the Navy, Marine Corps or Air Force.

When Army forces deploy, the signal is stronger.

Army units reach inland and signal long-term US commitment. Units on deployment that travel cross-country, whether on foot or by track, are the forces that provide the ability to extend American democratic values beyond the periphery and into the heartland of a nation. These forces, in concert with those of other services and agencies, "buy" influence for the United States and manifest its commitment to democratic values.

Strategists must be careful in taking too far the services' ability to promote democratic values abroad. US forces have been used to support, even prop up, dictators and monarchs whose political behavior is far from democratic. However, the fact remains that one of the president's foreign policy objectives remains tied to promoting democratic values outside the United States, and military forces, when used properly, provide an important capability in this regard.

Protect American Citizens and Economic Growth

Each component of the Armed Forces also contributes to the second requirement. The Navy and Air Force maintain free access to sea and air lanes of commerce. Without this access, the vitality of American life and business would drain. Furthermore, one naval force—the US Marine Corps—also provides added protection to US citizens through its defense of selected US government buildings abroad and quick-reaction forces afloat.

The Army plays an important role in this second requirement as well. Operating in conjunction with forces of each of the other services, Army units provide the nation with hostage rescue, counterterrorist forces, special operations forces and quick-reaction forces (whose size is beyond the Marine Corps' capability). Further, in what will become an intense world of economic competition in the coming decade, it is not unreasonable or "doomsdayish" to suggest that US access to strategic materials and safe passage for US commercial shipping may be threatened. Multiservice forces would be required in keeping the Panama Canal and the Suez Canal, and its supporting waterways, from closing or to reopen them, if so directed. Forces of more than one service would also be necessary to either ensure free access to the Persian Gulf and Strait of Hormuz or to ensure the delivery of strategic materials from a central African nation (or any other inland nation with an underdeveloped infrastructure).

Numbers alone demonstrate that each of these possibilities would require more than the Navy, Marine Corps or Air Force could provide. Navy, Marine Corps and Air Force units would play vital roles, perhaps even dominant roles, in some of these scenarios. But, in and of themselves, they are insufficient. Only under the rarest of circumstance could a ship, by itself, keep open a mine, factory, refinery, railway, canal or airfield. Neither would any aircraft assemblage, operating independently, be successful in these cases or others similar to them. Rather, the synergistic effects of the forces of each service in concert with the others will most often prove decisive in the kinds of situations that the United States will face in the 21st century.

With the globalization of business, there comes another concern with US economic security. How would we react to a nation that, as a result of its own internal difficulties, decides to seize US financial deposits and industrial facilities in its country? If we wanted to destroy industrial facilities or government buildings, the president could send the Air Force to bomb them. If the deposits and facilities were near coastal regions, the president could send a Navy or Marine Corps task force but only if the task force was close and time permitted to divert it from its station elsewhere. However, if time were essential (as it most often will be); if the object was to protect US interests, not destroy them (as it most probably would be); and if the locality was inland (as it very often is), then, the job requires an Army force on the ground—a force delivered and supported by the Air Force. In his recent essay, "The Presidency and Foreign Policy," Stephen Ambrose reminds strategists that "the power to destroy is not the power to control. Power is the man on the spot with the gun in his hand."[2]

The point is not that Army forces will play a dominant role in all future uses of military power in support of national vital interests. Rather, it is that no *single-service force* alone is sufficient to contend with an ambiguous future. The future contains enough uncertainty that no reasonable strategist should adduce arguments that smack of the "one potion cures all" approach to national security.

Prevent War and Hostilities Short of War

Effective diplomacy, we hope, will preclude military force from being required to protect American citizens and the economic growth of our nation. After all, today's world order is considerably safer than its Cold War predecessor. However, the world is not governed by a "Pollyanna" spirit. Bullies and would-be hegemons, who control some nations now and will control other nations in the future whenever they are able to seize power, are not always receptive to the reasoned discourse of diplomacy. The economic life of our nation requires that we not only rely on the competency of our diplomats but also

that we are capable of backing up that diplomacy with military force—alone or in conjunction with allies—if our national interest requires it. This demonstrated capability of backing up diplomacy with military force is the foundation of deterrence.

As before, each service plays an important role in preventing war and hostilities short of war. Sometimes, the very presence of warships, Marines, Airborne Warning and Control System aircraft, fighters, heavy mechanized forces, foot soldiers or special operations forces will preclude a crisis from developing. At other times, the ability to place forces of some or all of the services on alert or to deploy them to an area quickly may preclude a crisis from escalating into war or hostilities short of war. Depending on the situation, forces from any one service could accomplish some deterrent missions. However, because of the variety of conditions under which these missions occur, a single-service force is insufficient in and of itself to be decisive in every case.

These kinds of deterrent operations—whether conducted by in-place, forward-deployed forces or by forces deployed from the Continental United States—are important for at least three reasons. First, they manifest US commitment to its regional interests and treaty obligations. Second, they demonstrate the ability to mass decisive combat power when the nation decides it must. Third, they preclude power vacuums from developing, thus taking the opportunity to either seize or expand power away from regional despots.

Deterrence requires that US forces should be already in place in two very important locations—Europe and Korea. Regardless of how thankful we are over the positive developments in each of these areas and how much we must work to maintain a positive momentum, strategists must avoid viewing either area through rose-colored lenses. Many of the causes of war—fear, distrust, hatred, poverty, economic instability, ethnic unrest, ambition and excessive nationalism—remain as constants in both Europe and Korea. And, while we understand that military force cannot solve any of these problems, we must not forget that thousands of Americans have given their lives in both areas when other elements of national power failed to find answers.

Conditions do, however, justify reduction of US presence in both Europe and Korea. But strategists must not be overly hasty in either area. European leaders do not want to develop a collective security arrangement without the United States—this we learned in a recent European Community meeting in Rome as a result of the president's direct question. Korean leaders, concerned about the North Korean nuclear complex at Yongbyon, are also cautious over total US withdrawal from their peninsula. Reductions, even when necessary and appropriate, ought not bend to expediency. That is, US Armed Forces reduction below the level that guarantees a reasonable chance of success in protecting citizens; provides for economic growth; deters the threats to our vital interests; and wins if force is employed raises risk above what is acceptable. Such short-sighted reductions would merely set the conditions for the next generation of American sons and daughters to sacrifice as did their parents and grandparents.

The causes of war lie smoldering in the tinderbox of Third World nations and also in parts of the First and Second World nations. With the structured, bipolar international order gone, the potentially ambitious hegemon can sense opportunity. Operation *Desert Storm* may have dampened the ambitious plans of some but only for a time. Again, poverty, fear, hatred and loss of hope, not to mention unbridled greed, have ways of making the irrational road to war seem rational. War or the use of hostilities short of war does not usually develop along a rational path but along an emotional one. Where an unscrupulous leader emerges to identify some "other" group or nation as the cause of his group's or nation's destitution and discouragement, the potential for war rises. If the proliferation of the conditions from which war can arise is coupled with easy access by nations or groups to high-technology weapons, then the continued need to protect American citizens' economic security and vital US interests becomes apparent.

The future may have new forms of deterrent operations in store for US Armed Forces—peacekeeping and peacemaking operations. In parts of the world where US vital interests are at stake, the president might be compelled to make the peace by using military force to separate warring parties as a precondition for diplomatic negotiations. In other parts of the world, US interests may necessitate that military units assist friendly nations in keeping the peace. In a future where keeping down the possibility of war and stopping unrest from crossing over the threshold of war are important to US economic growth, the requirement to use military force, especially in conjunction with allies, seems appreciable.

As before, the forces of each service have a role and should be available to provide the National Command Authority a range of options. Peacekeeping and peacemaking operations, however, seem to demand a presence on the ground. Aircraft overhead or ships in port may help, but neither seems able to succeed in executing a task that requires a presence among people. Land forces—whether special operations, heavy mechanized or light infantry—are

required for these kinds of deterrent operations.

The United States, in conjunction with allies and whenever its vital interests are at stake, should use its diplomatic corps to attempt to discover real solutions to the problems that give rise to war. In some cases, however, a ship that comes into port, a task force that steams along a coast, a flight of aircraft that lands or a parachute drop at the right time and place can cool tempers or cause parties to think. They serve to check the emotions that give rise to war and set the stage for diplomacy and negotiations. These are show-of-force operations in which combat is not expected. In other cases, the right force at the right time can either stop unrest from becoming war or conclude war early before it escalates. These are contingency operations in which combat may or may not occur. Together, show-of-force and contingency operations constitute deterrence in the multipolar world.

These are the tasks that are important to our national security and economic growth in today's world and in the kind of world now developing. However, strategists must be careful not to equate such deterrent operations with the use of small forces. It is often the case that the kind of deterrent operations described above could be executed with just a few forces. But the ultimate source of deterrence is the belief in the minds of those whom the United States wants to deter that the show-of-force or contingency force is but the lead element of what the United States could bring to bear. Underlying the US strategy that relies heavily upon deterrence is the assumption that the nation has the means (immediately available, capable military forces) and the will to conclude a crisis on the terms we and our allies desire. If this assumption is not valid, then the US deterrent strategy rests upon a house of cards.

Naval, air or ground forces alone are sometimes capable of conducting deterrent operations, whether show-of-force or contingency, depending upon the conditions of the situation. However, none are capable of conducting successful deterrent operations under all conditions. In most cases, the fact is that to succeed in the realities of any given situation requires a joint task force made up of forces from all of the services, each complementing the others.

Win Battles and Campaigns

When deterrence fails and war or hostilities short of war occurs, the nation expects its forces to win. While cases exist where a single-service force alone might be successful in attaining US strategic aims, such cases are rare. They are rare not because military commanders want to give every service a "piece of the action." Rather, they are rare for, at least, the following reasons:

Complexity of War. Modern war is complex. The air campaign of the Gulf War, thought by some to be an example of a "single-service show," was not. Air operations benefited from the months of naval embargo that reduced the enemy's maintenance capability. It also required the support of space forces, Army helicopters and ground forces, sea-launched cruise missiles and special operations forces. The task of penetrating enemy air space in the situation presented by the Iraqis was too complex for a single-service force.

This does not diminish the excellent planning and execution of US or coalition air forces; it merely manifests a fact of life. It also demonstrates that air power advocates—reminiscent of the Italian air theorist Giulio Douhet who advised Benito Mussolini to concentrate the bulk of his nation's resources in the "decisive field, the air"—may be right in theory but wrong in reality.[3] In most real situations, as opposed to constructed "scenarios" that brief well, a single-service force is usually necessary but seldom sufficient to get the job done. Decisiveness lies with the right mix of forces relative to a specific geographic area, political situation and enemy.

Time Constraints. The task assigned to military forces is made more complex by the constraints of time. Even in those few cases where a single-service force may be successful, the time required for success is very often simply not available.

For example, the air and sea embargo of Iraq might have worked, but it is a matter of significant doubt whether the coalition would have held together long enough to realize success. Would the American public support an embargo the size of the 1990 one against Iraq if that embargo were still going on? Probably not, especially if no end were in sight and the threat of war was constantly hanging overhead. Or, could the United States afford such an extended operation, given its already massive fiscal difficulties? Again, probably not, especially if the price tag were open-ended or, more to the point, the allies refused to fund their part. Time alone often dictates that the force which commanders need to win comes from multiple services. A joint force ensures that pressure is brought to bear on an enemy in ways not possible by a single-service force. This increase of pressure decreases the time required to either exhaust or annihilate an enemy.

Cost of War. Given the costs involved in drawn-out combat—costs in national treasure, in lives, and in the devastation and misery caused by war—US political leaders, as well as those of other nations, will always want to keep combat as short as possible. Thus, the domestic and international context within

which war is fought will not be one supportive of commanders who employ a strategy that may require "a little more time." Political leaders will want to amass decisive combat power as quickly as possible and conduct combat in such a way as to finish quickly and decisively. In real situations, such power most often results from the conjunction of forces from each service.

Geographic/Environmental Constraints. Geography, like time, also limits the effects of a single-service force. A ground force is not effective in providing for the total security of sea or air lanes of commerce, although ground forces could play a role. Naval forces are not sufficient to project presence or power into the heartland of a nation with which vital US interests are connected. Air forces alone can neither secure land-based facilities, whether economic or military, nor open and completely protect land lanes of commerce.

Three environmental factors—the variety of geographic conditions, the political context and the enemy forces—lead one to conclude that rarely will any single-service force be sufficient to succeed. No two situations will be alike. Each requires a unique solution and force mix. Finally, to his advice that the future will not resemble the past, Hume might say, "And the next war will be unlike the last." Those who are potential regional hegemons, those who will take advantage of local conditions to advance their ambitions and those who intend to threaten or attack American citizens and business interests are already learning from Grenada, Panama and the Gulf War. Lesson number one is, "Don't fight the United States on its terms." That is, "Don't fight US forces in a conventional battle."

Synergism Requirement. Environmental factors are not alone in leading strategists to conclude that a single-service force will rarely be sufficient to succeed. The jingo of "one service or one weapon does all" also fails in light of the very nature of militarly decisive action. Attempts to isolate one service's actions from those of the others and, then, derive conclusions about effectiveness are attempts that any serious military professional avoids. This kind of analysis is amateurish, at best; divisive, parochial and dangerous to national security, at worst.

Such attempts—more common in times of budget reductions—exhibit fallacious reasoning in three ways. First, they falsely assume that either one service or another must be decisive. Not so, for this assumption forgets that the combined effects of all the services could also be a legitimate source of "decisiveness." Second, they mistakenly elevate a contributing reason for success to the status of the sole reason for success. Third, they erroneously change the contribution of a single-service force from being necessary for victory to being both necessary and sufficient, in and of itself, for victory. Serious professionals look to synergism—the product of the combined effects of the actions of each of the services in combination with the others—as the decisive element in producing victory. Decisive military operations are those that simultaneously pressure the enemy from as many directions as possible—space, air, ground and sea. Decision lies not with a single-service force but with the right mix of forces from each service.

The international situation permits, and during the next presidential campaign the people of America will demand, that the nation turn its attention to the internal threats to our national security. As the nation correctly focuses on these issues, however, Congress must remain diligent in executing its constitutional responsibility—maintaining an Armed Forces capable of providing for the common defense, that is, capable of securing the territorial integrity and political sovereignty of the United States. That kind of force is a balanced one, one in which the Army, as well as the Navy, Marine Corps and the Air Force, has a vital role to play. For strategists to suggest that Congress should build the US Armed Forces based on the belief that "a single-service force will play a dominant role in whatever situation requires military force" is to recommend a force built upon false belief. False beliefs are merely foolish in some professions; they are deadly in the military profession.

Being prepared for a future that will not resemble the past, succeeding in a future that will bring yet unidentified threats to US vital interests, assisting our nation's economic recovery in an increasingly competitive and interdependent world market and doing our part in making sure that the "New World Order" stays below the threshold of war—all require a strong and capable Army as part of a balanced US Armed Forces. Further, when that force is employed, because it will be a smaller, technologically superior force and because of time constraints, the margin for failure will be narrow. The United States can ill afford a military force that "should be" capable, "might be" capable or "probably will be" capable.

The ambiguity of the future demands that when employed, military force has the highest probability of success possible. The nation's prestige will be at stake, as well as the lives of the soldiers, sailors, airmen and Marines involved. Thus, the force in being Congress builds for the 21st century must be immediately available and capable. Saddam Hussein permitted the United States and its allies uninterrupted air and sea lines of communication, a relatively se-

cure base and six months in which to build up our military force and prepare. A strategist or congressional leader cannot assume that such conditions will ever be present again.

What kind of Armed Forces will Congress provide the nation? No doubt it will be smaller, and given the international and domestic situation, a smaller force is both necessary and appropriate. However, that smaller force must remain capable of providing for the common defense in a world changing as fast as ours. Congressional leaders may attend less to the realities of the strategic environment in which the United States lives than to the immediate issues concerning our domestic environment. Historically, the United States has gutted its military force after a major war, and we may be tempted to do the same now that the Cold War is over. In the past, the strategic situation—diplomatic, military, and economic—led decision makers to conclude that the United States could afford the luxury of this behavior. The future, however, will not resemble the past.

Strategists, therefore, are obliged to help Congress in this regard. We must recognize that the nation has to focus on the internal threats to national security. The United States' main strategic effort must be in finding and implementing solutions to domesalso provide for its common defense, strategists tic issues. In presenting ways the United States can must make cogent, well–reasoned recommendations based upon today's realities and the realities of the future, not parochial arguments. Otherwise, when the nation's main effort must again turn to external threats to national security, the United States will be found wanting and with little time to recover. Simply put, the payment for unpreparedness is blood. ***MR***

NOTES

1. David Hume, *A Treatise of Human Nature*, 2d ed, ed. L. A. Selby–Bigge and Peter H. Nidditch, (Oxford: Clarendon Press, 1978).
2. Stephen F. Ambrose, "The Presidency and Foreign Policy," *Foreign Affairs, vol. 70, no. 5 (Winter 1991/1992):120–37.*
3. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari, ed. Richard H. Kohn and Joseph P. Harahan, (Washington DC: Office of Air Force History, 1983).

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MR WWII ALMANAC

The Philippine Campaign

By Lieutenant Colonel Matthew S. Klimow, US Army

Shortly after the enormous shock of Pearl Harbor, the struggle in the Philippines gripped the American people. US–Filipino forces were scattered among many islands, including Mindanao, Cebu and, most notably, Corregidor. These brave men and women will forever be remembered as the "Battling Bastards of Bataan." It was on the small Bataan Peninsula, astride Manila Bay, that the most ferocious fighting took place and the fate of the Philippines was sealed.

Today, Americans focus on the indignities suffered during the infamous death march. However, soldiers may want to turn their attention to other lessons. The Philippine Campaign is a story of military neglect and unpreparedness for "the next war," as symbolized by photos of soldiers manning antiquated weapons in World War I wide–brimmed helmets. It is an equally inspiring saga of US fighting men and women at their best. Their valiant defense vitalized the nation and showed the world the Japanese were not invincible.

Strategically, the Philippine Campaign was short and insignificant. Powerful Japanese forces stormed Lingayen Gulf and pressed south toward Manila. General Douglas MacArthur, commander of Allied forces, initially attempted to defend forward in northern Luzon. By the time MacArthur escaped to Australia, his forces had retreated into the Bataan Peninsula where they hoped to hold out until reinforcements arrived. Surrender came five months after the initial Japanese onslaught.

This courageous struggle produced unlikely heroes. A small cadre of US forces led and fought side by side with green Filipino troops. Roughly half the US officers were National Guardsmen, and they were led by an old cavalryman known throughout the Army for his horsemanship and hard drinking. The air force was blown apart on

the runway on the first day of battle, and the Asiatic Fleet steamed away to escape capture. But a ragtag navy of gunboats stayed on and provided support, while airmen fought as infantry. On the tiny island of Corregidor, nurses endured relentless shelling and faced the same fate as combat soldiers.

Lieutenant General Jonathan M. Wainwright, West Point Class of 1906, commanded the troops. He was a decorated World War I veteran and a colorful character of the pre–World War II Army. In 1940, he was relegated to the Philippines to keep him out of the way—a final posting before retirement. Yet "Skinny" Wainwright proved to be the combat commander needed in the desperate struggle with the Japanese. He was well loved by his men, with whom he shared every deprivation and risk. With a cavalryman's flare, he led his troops in a series of delaying actions that frustrated a much larger and better-equipped Japanese army. For a man so tied to the traditions of the past, his courage, compassion, humor and bold tactical command make him a remarkable study in modern leadership.

Bataan became a fixation with the American public, but strategic military planners focused on Europe. No one in Washington believed relief of the Philippines was possible. However, President Franklin D. Roosevelt, Secretary of War Henry L. Stimson and Chief of Staff of the Army General George C. Marshall all felt there was a moral obligation to try. Plans were transmitted to MacArthur detailing a massive relief effort.

On 3 January 1942, Marshall's War Plans Division issued a pessimistic assessment of the relief situation. The officer who developed the report was Brigadier General Dwight D. Eisenhower, an old Philippine hand who knew the archipelago's defense plan. Eisenhower was blunt, writing that the Philippines would fall before reinforcements could be mustered. He also deemed relief efforts unjustifiable in light of the priority given to Europe.

Efforts to reinforce and resupply the Philippines were never executed, but promises of relief continued to pour out of Washington. These lies buoyed the spirit of the beleaguered troops, raised morale at home and perhaps salved the guilt of the country's leaders, who very much wanted to help the Philippine outpost but lacked the resources. MacArthur knew that convoys steaming for the Philippines had been diverted to Australia. Nonetheless, he too promised the troops that help was on the way, reminding them, "I shall return."

Wainwright had few illusions about the extreme situation the 78,000 Bataan defenders faced. Without resupply from the United States, his soldiers were starving. Malnutrition produced outbreaks of scurvy, beriberi and amoebic dysentery. Malaria was rampant, and by the end of March, it was estimated that 80 percent of the frontline soldiers had the disease. Yet, the Battling Bastards held on.

Wainwright moved his headquarters from Bataan to Corregidor where he received unequivocal guidance from MacArthur via radiogram: "When the supply situation becomes impossible, there must be no thought of surrender. You must attack." This was no surprise to Wainwright since Marshall, in Washington, had earlier informed him that Roosevelt would not accept the surrender of US troops. Few US commanders have ever been in a more difficult situation.

By 7 April 1942, the enemy had routed Bataan's exhausted defenders, and the command was in chaos. Following the orders of his commander in chief, Wainwright reluctantly forbade Major General Edward King Jr., the commander on Bataan, to surren-

der. Without means to resist the enemy and understanding the limitations placed on Wainwright, King saw no alternative and capitulated on 9 April 1942.

Another month passed before Corregidor fell and Wainwright issued the order for all Allied troops to surrender. Many US soldiers on outlying islands untouched by battle refused to follow this order despite the insistence of their officers that entire units capitulate. Indeed, the Law of Land Warfare states that soldiers must scrupulously observe surrender agreements. But this concept is at odds with the US military ethic that demands soldiers continue to fight as long as there is a means to resist. As a result, many US soldiers dutifully turned themselves over to the Japanese while others disobeyed orders and fled into the jungle to fight as guerrillas.

The tremendous valor of the individual fighting men in the Philippine Islands in 1941–1942 leaves the United States with a proud legacy despite the bitter military defeat and ignoble Bataan Death March that followed. It remains a fascinating study of the courage, leadership and ethical dilemmas that instruct, as well as inspire, those who care about soldiers and the conduct of war. ***MR***

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March 1942 By Major George J. Mordica II, Combat Studies Institute, USACGSC

Sunday 1—Soviets launch counteroffensive in the Crimea.

German U-boats continue their attack on US shipping in the Battle of the Atlantic, sinking 86 vessels in US waters during March. More than half are tankers.

Monday 2—Japanese troops land at Mindanao Island in the Philippines.

Wednesday 4—General Joseph W. Stilwell establishes US Army Forces China–Burma–India (CBI) headquarters.

Major General George S. Patton Jr. reconnoiters Pennsylvania-size tract of government-owned desert in Southeast California to train Army divisions headed to North Africa. Designated the Desert Training Center, it officially opened in April 1942, closed two years later and is the ancestor for the Army's National Training Center at Fort Irwin, California.

Thursday 5—The Soviet Union announces recapture of Yukhnov on the central front.

Friday 6—German air attacks on Malta continue throughout the month, as the British try to resupply the island.

German battleship *Tirpitz* stopped from attacking supply convoy by aircraft from HMS *Victorious*.

Saturday 7—The Japanese invasion fleet begins landings on New Guinea. In Burma, the British evacuate Rangoon.

Monday 9—A major reorganization of the US Army is effective this date. General Headquarters is abolished and three autonomous commands are created: Army Ground Forces, Army Air Forces and Army Service Forces.

Wednesday 11—General Douglas MacArthur and family depart Luzon, Philippines, as he gives famous "I shall return" speech.

Saturday 14—US Troops arrive in Australia.

Tuesday 17—MacArthur arrives in Australia to take supreme command of Allied forces in the Southwest Pacific.

Wednesday 18—Vice Admiral Louis Mountbatten is appointed chief of Combined Operations.

Friday 20—Major General Jonathan M. Wainwright learns of pending promotion to lieutenant general and selection to command all US forces in the Philippines.

Thursday 26—Nazis begin deportation of Jews to German concentration camp in Auschwitz, Poland.

Friday 27—US War Plans Division issues small-scale Operation *Sledgehammer* as emergency measure in case of Soviet collapse in autumn 1942.

Saturday 28—British commandos conduct a costly raid on St. Nazaire, Northwest France, to damage harbor and docking facilities on the coast.

Monday 30—US Joint Chiefs of Staff divide the Pacific into two commands: Admiral Chester W. Nimitz is commander-in-chief of the Pacific Ocean Area and MacArthur is Allied supreme commander of the Southwest Pacific Area.

The Pacific War Council is established in Washington, D.C.

MR BOOK REVIEWS

THE DEFENSE REVOLUTION: Strategy for the Brave New World by an Arms Controller and an Arms Builder by Kenneth L. Adelman and Norman R. Augustine. 239 pages. The Institute for Contemporary Studies, San Francisco, CA. 1990. $19.95.

The authors are former insiders with significant experience in arms control and in managing defense resources for the federal government. Kenneth L. Adelman is now a columnist and "think tanker"; Norman R. Augustine is the chief executive officer of Martin Marietta, a major defense manufacturing company. Their book is a broad, well-packaged survey of the problem of determining the threat to US national security and allocating resources and managing the Department of Defense (DOD) to meet it. This problem is central to the current debate on the nature of the threat to US national security and the appropriate share of tax dollars that the Pentagon should be given to meet it.

The Defense Revolution belongs to a class of books for the defense policy generalist. Comparable books include Richard Stubbing's *The Defense Game* and Jacques S. Gansler's *Affording Defense*. All three works include sections, with varying degrees of emphasis, on the security problem, the role of Congress in providing funds for defense and the acquisition system, broadly considered. Stubbing is particularly adept at illustrating the difficulties involved in buying for, or selling to, DOD; Gansler is the better of the two on the defense industrial base.

The Defense Revolution is superior to these earlier books in two respects. The authors have incorporated the critical changes in the threat to US security stemming from the collapse of the Warsaw Pact. They have also paid more attention to high-technology issues that are of increasing importance to defense. These issues include not only budgeting for, and gaining access to, rapidly evolving technology at home and off-shore but also using it on the battlefield. This dual emphasis on the new threat environment and the technology issues attending defense procurement distinguish and recommend this book.

The first issue Adelman and Augustine confront is the problem of determining the US role in the new world. Isolationism is neither likely nor advisable. Absent the sometimes threatening simplifications of the Cold War, we face a more complex set of problems and opportunities. Despite warning against isolationism, the authors predict a diminution of US military involvement abroad for the same reason that President George Bush diminished expectations for greater spending at home—more will than wallet: "Our hearts and good wishes will extend further than our military personnel and our arms."

Tracking the debate in Paul Kennedy's *The Rise and Fall of Great Powers*, the authors trace the emerging international order. Their new universe includes the usual suspects. Economic power has transcended military power, and the arms control problem will shift from superpower and alliance confrontation to the proliferation of weapons of mass destruction (such as long-range missiles and chemical weapons) within Second and Third World countries (and now, the threat of "loose nukes" generated by the crackup of the Soviet military machine). Economic power will move to Europe and Japan while security problems on the Continent and in Asia will continue to decrease. The invisible hand—budget shortfalls and the need to compete in trade and manufacturing—will depress defense spending and curb arsenals within the industrialized countries, replacing the moral calculus and deterrence arithmetic that previously prescribed the arms control agenda.

Adelman and Augustine suggest that the savings derived from defense cuts in the former Soviet Union should be larger than anticipated because their defense level of effort has been underestimated by US officials. Rather than the 11 to 13 percent of the gross national product (GNP) previously estimated, the Soviets were devoting as much as 20 to 25 percent of their GNP to the military. By comparison, the budget resolution passed by Congress about the time this book was released is to cut US defense spending to 4 percent of GNP by 1995, the lowest level since Harry Truman was in office. And this US baseline proved unsustainable even following the abortive coup in the Soviet Union and the recession at home.

While the end of the Cold War has induced a fundamental shift in both the disposition and apparent value of military power, technological advances have introduced even more revolutionary

potential uses for weaponry. Although the implications of this defense revolution are not all positive for the United States, we have no choice but to exploit new military technologies, if only to protect ourselves from the growing list of groups and governments that will also acquire them.

The capability to locate and destroy targets under adverse conditions has improved dramatically, which means that battle lines will be ragged, sanctuaries scarce and attempts to confine military conflict in space and time fruitless. The transition from "smart" to "brilliant" weapons is well under way, depreciating the capital military systems of countries that fail to keep pace.

The authors believe strongly that the security of the United States will continue to depend significantly on development of the most sophisticated military systems. They identify a number of technologies thought to be critical to this task, such as stealth, propulsion, robotics, optics, materials and power generation. But they offer no means of rank-ordering their extensive list of critical technologies to assist decision makers in allocating what they acknowledge will be a diminishing defense dollar.

The chapter dealing with defense economics is perhaps the most interesting and substantial. Our defense posture has been influenced by both our economic strength and that of the Soviets and by the extraordinary growth in the cost of buying and maintaining modern weapons. Defense spending as a share of both GNP and total government outlays has been declining fairly steadily over the past four decades, temporarily interrupted by the Korean conflict, the Vietnam War and the 1981–1985 Ronald Reagan buildup.

The sharp builddown of defense that began in 1986 and was accelerated during the Bush presidency also draws to our attention the perennial demand for a more efficient defense acquisition process. The authors have two contributions to make regarding this thorny and recurrent problem. Their explanation of the selective impact of inflation on defense is the more helpful of the two. The other argument consists of a colorful description of public misunderstanding of DOD and the defense economy, the traditional castigation of congressional micromanagement and suggested reforms.

The authors' real contribution to the debate on acquisition and defense budgeting lies with their discussion of the problem of budgeting for inflation. "Techflation" occurs when agencies such as DOD buy more equipment at the high end of the technology spectrum, where costs regularly exceed inflation. The higher the technology in each succeeding generation of weaponry, the greater is the capability, as well as the cost. The authors' premise here is that high-technology weaponry will continue to be the *sine qua non* of US defense strategy and tactics and that security concerns will drive, and defense budgets will support, a continuation of intense international competition for sophisticated military technology. Diminished support for high-tech systems such as the B-2 bomber suggests that the military virtues of these technologies will not be sufficient to keep all of them in a defense budget undermined by expanding costs and a contracting threat.

Techflation explains why governments seeking to maintain "modern" forces at fixed levels must fund defense at rates *above* inflation. Defense budgets at zero real growth will result in a smaller military if that force is to be equipped with adequate defense technology. Using a calculus that assigns technology and inflation values, Augustine and Adelman allocate spending for a "balanced military force" and conclude that the cost of this force grows about 3.4 percent per year above inflation. The implication is that keeping pace with inflation is not the same as keeping pace with the competition. But this assumes, contrary to events since this book was published, that the competition is not similarly constrained.

The question of total force size and composition must be addressed as well in budgeting for techflation. The 80,000 cut in troop strength mandated by Congress in 1990 manifests the trade-off between force size and technological capability. Clearly, what is occurring in current defense budgets is a set of exchanges between force size and the mix of weaponry. Even before the Soviet threat evaporated and the US economy headed south, the administration was advocating a five-year budget for defense that would leave DOD 22 percent behind inflation. These severe budgetary constraints will exacerbate longstanding conflicts over the proper allocation of defense resources. The Gulf War, the eclipse of the Soviet Union and the recession have stimulated new ones.

Richard Doyle, ***Naval Postgraduate School, Monterey, California***

LUCIUS D. CLAY: An American Life by Jean Edward Smith. 835 Pages. Henry Holt & Co., New York. 1990. $35.00.

Few US Army officers made a more significant contribution to the success of the US World War II war effort and postwar European stability than Lucius D. Clay. Fewer still combined Clay's abilities as a soldier, statesman and organizational genius. Although Clay's military career is inextricably

linked to postwar Germany, where he served as military governor at the time of the Berlin Airlift, that episode was only a minor segment of a life devoted to public service.

In *Lucius D. Clay*, Jean Edward Smith has written the definitive biography of this remarkable officer and, in doing so, makes a major contribution to military history. As the former editor of Clay's personal papers and a renowned historian of postwar Germany, Smith portrays his subject as one of a vanishing breed of Americans, a public servant whose 60 years of public service was never tarnished with a dent to his reputation for probity and rectitude.

Smith's portrayal of Clay as the atypical military officer during the interwar period is intriguing. Clay never attended the US Army Command and General Staff College or the Army War College. Unlike most of his more famous contemporaries, Clay moved in unusual circles between the wars. As an Army engineer, Clay experienced a wide range of civilian activities, including public works and disaster relief. He was instrumental in the organization of numerous New Deal programs such as the Works Progress Administration and the Civilian Conservation Corps.

These activities brought Clay to the attention of President Franklin D. Roosevelt, Harry L. Hopkins, Harold L. Ickes and other New Deal politicians. When war erupted in 1941, Hopkins influenced Clay's selection to head the War Department's vast procurement effort as director of materiel. The only instruction he received from Brehon B. Somervell, chief of Services of Supply, was to "find out what the Army needs and get it." He succeeded magnificently.

Following a short tour as deputy military governor in Germany in 1945, Clay assumed total command of the European Theater in 1947 When he was appointed military governor and commander in chief, Europe, in 1947, Clay had the unique distinction of being the first full general in the history of the Army never to have served in combat. His management of the occupation was nothing short of inspirational. When Clay retired in 1949, Germany had weathered the Berlin Airlift and was well on its way to full recovery.

Upon his retirement, Clay began a second career of public service both in industry and Republican Party politics. Still, it is as military governor in Germany that Clay is best known. If Germany today is an economic and political success, much of the success is due to Clay. He, more than any other military officer or politician, realized that German recovery was essential to the future stability of Europe. Berliners, in turn, never forgot their debt to Clay. At the foot of his grave at West Point, they placed a stone tablet that reads, "We Thank the Defender of Our Freedom."

LTC Cole C. Kingseed, *USA, Naval War College, Newport, Rhode Island*

PAYBACK: America's Long War in the Middle East by John K. Cooley. 272 pages. Brassey's (US), Inc., McLean, VA. 1991. $19.95.

If you read only one book about the US relationship with the Middle East, it should be John Cooley's *Payback*. The author draws on more than three decades of Middle East and North African experience and a unique depth of sources—public, private and classified—on all sides of the issues and at the highest levels of government to produce a significant resource for students of US involvement in the Middle East. In a sense, what Cooley has done is assemble a primer on the roots of today's Middle East turmoil, which he feels are founded in the "quiet US–Iranian warfare that has flared intermittently since the fall of the Shah [of Iran]."

The book intelligently and clearly lays out in laymen's language a process of well–meaning attempts by Americans to bring peace to that region—ideas of peace, freedom and happiness—essential to the American dream. It has often seemed that these attempts have collided with the ghosts of the region's past—promises made to Arabs, Jews, Iranians, Kurds and other minorities by Western statesmen. Cooley adds substance to these ghosts that hover alongside concrete reminders of past good works such as the American–style schools, colleges and universities that have brought a measure of enlightment to the region.

Payback offers a plausible explanation for a number of crucial issues: US intelligence's lack of preparation for the Shah's fall and ignorance of internal Iranian development; the effects of the 1982 Israeli invasion of Lebannon; the centuries–old Iranian relationship with the Jews, which facilitated the secret triangle of US–Israeli–Iranian collusion that emerged in "Irangate"; responsibility for the bombings of the US Marines and Pan American Flight 103; the effect of Ayatollah Khomeini's death on the US–Iranian relationship; the Iranian revolution's impact on the collapse of communism and the Muslim challenge to rule in what was the Soviet Union; and how the United States' secret war with Iran led to confrontation with Iraq.

Cooley's voluminous details are not boring or cumbersome. On the contrary, they are balanced by a useful analysis of the inevitable "paybacks"

borne by the United States during a key decade following its overreliance on a single man, the Shah of Iran. After his fall, this overreliance resulted in a loss of trust and confidence in the United States by the people of Iran and its neighboring rulers, who justifiably feared for their own survival. It was not until the successful conclusion of Operation *Desert Storm* that the lost confidence was restored.

Unquestionably, this book will fill a gap on many bookshelves, but more important, it will be read and, in the process, will be a major force for dispelling myths and misconceptions about key events shaping our world today. Cooley is a convincing author, who has made a significant contribution to the meaning and depth of understanding necessary for any thoughtful examination of the US role in the Middle East.

COL Jimmie F. Holt, *XVIII Airborne Corps, Fort Bragg, North Carolina*

THE LIMITS OF GLORY: A Novel of Waterloo by James McDonough. 300 pages. Presidio Press, Novato, CA. 1991. $19.95.

Author James McDonough attempts to do for Waterloo what Michael Shaara so brilliantly accomplished for Gettysburg in *The Killer Angels*—write a defining novel that captures the essence of the most celebrated passage of arms in the 19th century. *The Limits of Glory* is a fine novel that portrays, far better than most historical accounts, what it must have been like to fight on the Napoleonic battlefield. The close-in, highly personalized nature of this combat, with its traumatic and terrifying effects on both men and animals, is graphically depicted.

McDonough falls *just* short of Shaara's artistry primarily because of his viewpoint. *The Killer Angels* succeeds, in large part, because its author makes us empathize with the commanders on both sides. No doubt this was easier for Shaara, since generals Lee and Longstreet, Meade and Hancock, Pickett and Chamberlain are the stuff of legends, from a war we tend to romanticize too much. McDonough does not, however, evoke such understanding and concern for both sides. Rather, he writes the Whig account of Waterloo.

This anglophilia is not neccessarily a bad thing. After all, we have been treated to innumerable French accounts of the battle, from Henry Houssave to Henri Lachouque. The Duke of Wellington and his army are certainly due their innings. But the author's viewpoint—his intense sympathy for the British and his disdain for Napoleon—limits his ability to make the reader empathize with the men of both sides. Thus, he cannot quite evoke the kind of engagement Shaara pulls from his readers.

Failure to live up to the achievements of *The Killer Angels* does not mean *The Limits of Glory* is a failure as a novel. Far from it! McDonough is to be praised for setting so lofty a standard for his work. He has put together a heroic cast of British characters, and their courage and sacrifice lose none of their poignancy in his account. The student will find in this book a real understanding of the ethos of battle described by a man who is both scholar and combat veteran. For the professional, this book, such a joy to read, serves as a salutary reminder that glory not only has its limits but also exacts its own horrific costs.

More important—especially for warriors in a technology-driven age—McDonough's fine novel underscores the old but crucially important principle that the human element remains the focal point for understanding war. In an age that too often worships technology, it is a pleasure to recommend this book.

LTC Gary P. Cox, *USA, School of Advanced Airpower Studies, Maxwell Air Force Base, Alabama*

THE GULF WAR READER: History, Documents, Opinions. Edited by Micah L. Sifry and Christopher Cerf. 526 pages. Times Books, New York. 1991. $15.00.

Well over half the 84 articles, speeches and resolutions brought together in this book deal with the presidential decision to enforce the United Nations' gulf resolutions by military means. The conflict's origins, conduct and expected consequences are also summarized briefly.

Philip Knightley observes in the opening article that the underlying cause of instability in the region remains the British and French division of the Ottoman Empire's remains after World War I. Boundaries were drawn more to distribute the pie than in recognition of ethnic or resource concentrations. Two uniquely British decisions—creation of the Palestinian state for Jews and of a deliberately landlocked but oil-rich Iraq—still remain festering problems. Later essays note that the world's need for oil and the uneven distribution of its proceeds have been exploited by nationalist extremists for a half-century. Walid Khalidi describes Iraq's rationale for the invasion as Saddam Hussein's Messianic perception of himself as leader of the great Arab nation with a personal mission to redress decades of wrongs heaped upon his country.

Even allowing for a clear editorial bias in selecting the works to be included, it seems clear

that most of the advice reaching the president advocated giving the sanctions more time to work before resorting to armed force. These opinions were expressed not only by religious moderates and pacifists but also by two former Joint Chiefs of Staff chairmen. These views were based on a desire to avoid the loss of American lives or a repetition of Vietnam; the threat's significance to our interests; a belief that the Hussein regime could not survive a protracted siege; and concerns about the war's morality.

Views favoring the early use of force were best summarized by Representative Stephen J. Solarz (D–NY). His stated reasons include the economic and military threat posed by a Hussein able to intimidate his neighbors; doubts about the sanctions' efficacy against a totalitarian regime; and, perhaps most important, our ability to maintain the fragile coalition. He also observes that should the sanctions have forced Hussein to withdraw, Iraq would have retained its military strength and nuclear potential. Historians will debate the relative merits of these arguments. The real significance of this debate is the extent of domestic division it represents in response to clear–cut aggression in an area of our national interest. Future crises, such as Yugoslavia's dissolution, may be far less clear as immediate threats to our well–being. Military professionals, in particular, must be sensitive to this environment within which national strategy must be developed and applied.

Six papers by distinguished journalists express concerns about restrictions on the media and efforts to manage the news. The case for greater freedom in reporting military operations is eloquently made here. The book's final section brings together eight

PASS IN REVIEW

DESERT STORM: The War in the Persian Gulf by the editors of *Time Magazine*. 232 pages. Little, Brown & Co., Boston, MA. 1991. $19.95.

With more than 100 photographs and 14 pages of maps and charts, this book is an overview of Operation *Desert Storm*, the events that precipitated it and its immediate aftermath. The book's analysis falls short in its judgments of the war and its aftermath, but as a souvenir of history, it fills the niche well. Other media organizations have published similar books, but I believe this book is the only one that offers a free personalized book cover to members of the military who served in the Gulf War.—**SSG Todd E. Pierce, *USAR, Princeton, Minnesota***

DESERT WARFARE: German Experiences in World War II by Alfred Toppe. 103 pages. Combat Studies Institute, US Army Command and General Staff College, Fort Leavenworth, KS. 1991.

Edited and translated from an original manuscript, this is an excellent primer on desert warfare written by a notable German general officer—Major General Alfred Toppe. With vivid clarity, he relates the German army's desert warfare experiences in the North African campaigns against the British and Americans. Of real value is the discussion of the effects of desert terrain and climate on planning, operations, equipment, logistics and personnel, and even on nutrition, disease and troop welfare in the desert environment. This book is not theoretical but is based on experience; it is extremely valuable as a training resource for our own desert forces.—**COL W. D. Bushnell, USMC, *9th Marine Corps District Headquarters, Shawnee Mission, Kansas***

LIGHTNING OVER BOUGAINVILLE: Yamamoto Mission Reconsidered by R. Cargill Hall. 220 pages. Smithsonian Institution Press, Washington, DC. 1991. $21.95.

This delightful, unassuming book is a fascinating combination of primary source historical material and academic perspective on a critical turning point in World War II. It includes the proceedings of a seminar on the interception and shooting down of Admiral Isoroku Yamamoto, with remaining protagonists rehashing events from their quite diverse, sometimes controversial perspectives. It asks historians and philosophers their opinions on the practice of assassinating national leaders as a facet of foreign policy. The question is not answered. Appended are interviews with two Japanese aviators, an interview with retired US Marine Major General John P. Condon and several original source documents.—**LTC Hollis T. Reed, *USAR, Pineville, Louisiana***

selections ranging from the president's "Kuwait is Liberated" speech to Michael T. Klare's assertions that the pentagon has invented the mid-intensity conflict threat as a self-preservation means. The editors' biases, at least, remain consistent. This section also includes Anthony H. Cordesman's conclusion that the AirLand Battle doctrine works and a sober assessment by Henry A. Kissinger of prospects for the president's new world order.

An extensive listing of further reading and bibliography make this one of the most valuable reference sources available today. This is a singularly important book for the military professional; one that offers rare insight into the thinking among our leaders with the greatest reluctance to resort to the force of arms.

COL John W. Messer, *USAR, Retired, Ludington, Michigan*

KATYN: The Untold Story of Stalin's Polish Massacre by Allen Paul. 389 pages. Charles Scribner's Sons, New York. 1991. $24.95.

In April 1943, the Germans announced the discovery of mass graves in the Katyn Forest near Smolensk. The corpses found there were those of Polish officers captured by the Soviets in 1939 and murdered the following spring. Allen Paul's *Katyn* recounts the events surrounding the brutal, systematic execution of prisoners of war by the Soviet secret police.

The Nazis attempted to use their discovery as a wedge to split the powers allied against them. The failure of that attempt was largely due to a combination of realism and cynicism at the highest levels in the West. The reader is made painfully aware of the bitter irony in Germany's defeat—that the war begun to save Poland ended in its devastation and

H. NORMAN SCHWARZKOPF: Road To Triumph by M. E. Morris. 287 pages. St. Martin's Press, Inc., New York. 1991. $4.99.

Unfortunately, US Navy Captain M. E. Morris' laudatory look at General H. Norman Schwarzkopf is not a complete biography of the general. It summarizes the press accounts released during operations *Desert Shield* and *Desert Storm*. Well-written and interesting though some of the anecdotes are, the book does not present anything more than a fuzzy snapshot of both the man and the times. If Morris had access to anything beyond news reports and his own military expertise, it does not come through in the narrative.—**SFC John T. Broom, *USA, US Army Armor School, Fort Knox, Kentucky***

THE VOICE OF AMERICA: Propaganda and Democracy, 1941–1945 by Holly Cowan Shulman. 282 pages. The University of Wisconsin Press, Madison, WI. 1990. $37.50 clothbound. $12.95 paperback.

This book is not for light reading—it has 43 pages of notes and a 24-page bibliography. Written by the daughter of one of the guiding lights of the Voice of America (VOA), it goes into great detail about the inner workings of one of America's most potent wartime propaganda tools and answers just about any question concerning how the VOA functioned. The author hints that the book is the result of a dissertation, which the notes and bibliography tend to support, but it does not read like one. It shows the struggle between conservatives and liberals for peoples' minds and would be a useful addition to any military library.—**John A. Reichley, *Directorate of Academic Operations, USACGSC***

AN UNKNOWN FUTURE AND A DOUBTFUL PRESENT: Writing the Victory Plan of 1941 by Charles E. Kirkpatrick. 158 pages. Center of Military History, Washington, DC. (Available from the Superintendent of Documents, US Government Printing Office, Washington, DC.) 1990. $4.75.

Before Pearl Harbor, Albert Wedemeyer, an obscure major assigned to the War Planning Division, was tasked to make an estimate of how much materiel the United States would need to go to war and to project how many men we could mobilize into what kind of divisions, as well as our national strategy to use the force. His resulting 14-page document sketched the outlines of military mobilization. Wedemeyer's book will be useful as the military faces a reduction in size, fewer weapon systems and an unknown threat. This well-written monograph deserves the widest possible reading by military planners and historians.—**Lynn L. Sims, *Command Historian, US Army Combined Arms Support Command, Fort Lee, Virginia***

subjugation by Adolf Hitler's former accomplice, Joseph Stalin.

Paul could have confined himself to the massacre, the discovery of the crime and its aftermath. Instead, he chose to use the atrocity as the centerpiece for a larger portrait of Stalin's efforts to destroy the very soul of Poland through mass deportations of intellectuals, professionals and the Polish middle class. The stories of the survivors vividly depict the ruthlessness of the Soviets and the courage of their victims.

Fifty years after the Katyn Forest massacre, Mikhail Gorbachev publicly acknowledged the Soviet Union's guilt. Paul's book is more than a fascinating account of the atrocity and its detection. *Katyn* describes a wound still deeply felt, one horrendous component of a genocidal campaign and a crime, as yet, unpunished. The Soviets have brought no one to trial, nor have they apologized for the mass deportations. Therefore, what happened in the Katyn Forest over a half-century ago continues to influence the course of Polish–Soviet relations in the last decade of the 20th century.

LTC Neil N. Franklin, *USAR, Montgomery, Alabama*

CONTROLLING THE SWORD: The Democratic Governance of National Security by Bruce Russett. 201 pages. Harvard University Press, Cambridge, MA. 1990. $22.50.

Civilian control of the military establishment is an article of faith within the American political system. Beyond that bromide lies complexity and contention, especially in those nations with sophisticated armed forces and legislators with a sense of, and a scent for, the next election. Who controls whom, under what circumstances, at what costs, for how long and why would be better questions to ask about the relations between the civilian and the military sectors.

Bruce Russett, a well-known quantitatively oriented professor of political science at Yale University, New Haven, Connecticut, has attempted to weave together a number of highly sophisticated studies (including some of his own) to give us a sense of the politics of national defense. He supplies a rich mixture of intellectual maxims and nuggets throughout his tightly organized and thoughtfully argued treatise aimed at the midcareer officer or the beginning graduate student in political science. It is best read in several sittings with pen in hand.

Rather than presenting a long, intricately assembled argument, the author explores the interactive relationship between the electorate and its leaders on the use, funding, rattling and sheathing of the sword. At the heart of his study lies a mass of polling data showing how leaders govern sensibly or foolishly when they are held accountable before the electorate or, more precisely, what he calls the issue publics. Such publics, subdivisions within the larger electorate, scrutinize foreign and defense issues, for example, and their views remain rather stable over time. These groups perform a stabilizing function, protecting the policy makers against violent swings in public opinion.

An underlying motif of this provocative, pioneering book is that domestic rather than foreign politics is the preeminent stage. There is a certain refreshing candor in Russett's observation that foreigners do not vote in American elections, which may explain why certain policies may be designed for, and evaluated by, the way they "play in Peoria." This way, the universal is transmuted into the parochial. He also underscores the significance of symbolic politics and the need to be seen "doing something."

From the national defense perspective, he indicates that the liberals have never appreciated as fully as the conservatives the need to cultivate the electorate and to follow public opinion findings on the subject of arms control. Overall, Russett finds the American electorate fairly mature and shrewd on matters dealing with the defense of the realm. In sum, we have a defender of the public who very carefully traces out the paths of influence between the governors and the governed in terms of the broad outlines of foreign and defense policies and postures.

Richard Dale, *Southern Illinois University at Carbondale, Carbondale, Illinois*

PELELIU: Tragic Triumph, The Untold Story of the Pacific War's Forgotten Battle by Bill D. Ross. 381 pages. Random House, Inc., New York. 1991. $22.00.

Peleliu might easily be a history of the 1st Marine Division in World War II, as well as what it is—a gripping tale of one ferocious battle in the Pacific War. Bill D. Ross' narrative of the long and bloody battle is captivating. His descriptions and the words of those who fought there are thrilling. He begins with an exceptional background history of the 1st Marine Division during its early campaigns at Guadalcanal and Cape Gloucester—two epic battles that blooded the "Old Breed." He continues this remarkable story of the "Old Breed" at its highwater mark, its Pacific War virtually ended among the coral caves of that forgotten atoll—Peleliu.

A small, coral island in the Palaus, just 6 miles long and 2 miles wide, Peleliu was supposed to be essential to the flank protection of General Douglas

From My Bookshelf

By Martin van Creveld

"I am inclined to agree with General Sir John Hackett concerning the reading essential to a young officer: since there has never been a good officer who was only *an officer, there can be no such thing as a purely professional reading list. Still, if I were to advise young officers as to books that would do most to help them understand war, I might select the following:"*

On War by Carl von Clausewitz. The second best book on war ever written.

War in the Middle Ages by Philippe Contamine. Precisely because the medieval attitude toward war was so utterly different from our own, it forms a useful basis for comparison.

A Savage War of Peace by Alistair Horne. Future war will be overwhelmingly of the low-intensity type, and this book explains, as well as any other, how it is done.

War in European History by Michael Howard. An incomparably brilliant, short history of warfare as a whole.

The Prince by Niccolo Machiavelli. Unsurpassed on the meaning of power, how to obtain it and how to maintain it.

Arms and Influence by Thomas C. Schelling. By far, this is the best book on nuclear strategy and the only one written since 1945 that is at all comparable to Clausewitz.

The Art of War by Sun-Tzu. The best book on war ever written.

The History of the Peloponnesian War by Thucydides. A grand panorama of Greek warfare in all its aspects; takes us back to a world at once similar to, and utterly different from, our own.

Thus Spake Zarathustra by Friedrich W. Nietzsche. "A real man loves two things—danger, and play."

The Transformation of War by Martin van Creveld. Finally, in all modesty, I should like to recommend one of mine. In it, I argue two things: the view that sees in war simply the continuation of politics is wrong; and the age of conventional warfare (and of the high-tech weapons that are used in it) is virtually over.

Martin van Creveld is a an adjunct professor of the US Marine Corps Command and Staff College, Quantico, Virginia. He has taught at The Hebrew University, Jerusalem, Israel; the Israeli General Staff and Command School, Israel; and the National Defense University, Washington, D.C. He has several books on the Army's Military Qualification Standards reading list including, Supplying War, Technology in War and Command in War.

MacArthur's planned invasion of the Philippines in 1944. It possessed two airfields and was defended by 13,000 battle-hardened and highly skilled Japanese soldiers led by a brilliant commander. The orders to the Japanese defenders were to inflict as much damage to the Americans as possible and then die in place. They did both.

On 15 September 1944, the 1st Marine Division, the only assault element used in the attack, conducted an opposed amphibious assault onto the coral and jungle-covered island. The US Army's 81st Division was held in reserve. Planning for the operation was sloppy and hasty. Seaborne movement of the assault force and supporting forces was marred by numerous mishaps: battleships collided, oilers collided, seven transport ships failed to show up at all, and only two ships could carry tanks. Intelligence was incomplete and inaccurate. What was believed would be a quick victory lasted for over six weeks.

It was the costliest single battle of the Pacific War. The 1st Marine Division, numbering less than 13,000 men, lost more than half its strength. Over 6,300 Marines were killed, wounded or missing. All but 220 of the 13,000 Japanese defenders were killed. For what? The grim historical answer is—for nothing.

Ross repeatedly claims Peleliu was an unnecessary battle, a mistake that cost thousands of American lives, contributed nothing to the outcome of the war, and is now a forgotten battle, even to today's Marines. He is right. Six months earlier, in

March 1944, US naval gunfire and carrier–based aircraft totally destroyed Peleliu's two airfields and all the Japanese aircraft based there, eliminating Peleliu as a threat to MacArthur's invasion of the Philippines. Nonetheless, the planned assault was carried out. It is no wonder Peleliu is a forgotten battle.

Ross, an acclaimed journalist and author, served as a Marine combat correspondent at Iwo Jima. His writing is vivid and riveting, and his premise is correct. *Peleliu* contains numerous photographs and is supported by several excellent maps. It is a superb book, well written, extensively documented and worthy of widespread attention among professional men of arms. An excellent companion would be E. B. Sledge's *With the Old Breed: At Peleliu and Okinawa*.

COL W. D. Bushnell, *USMC, 9th Marine Corps District Headquarters, Shawnee Mission, Kansas*

INCURSION: From America's Chokehold on the NVA Lifelines to the Sacking of the Cambodian Sanctuaries by J. D. Coleman 294 pages. St. Martin's Press, Inc., New York. 1991. $19.95.

This book fills a gap in the chronicles of US tactical and strategic operations of the Vietnam War. The 1st Cavalry Division's 1969–1970 interdiction operations in the critical region northwest of Saigon and the subsequent cross–border operations into Cambodia in 1970 have not previously been examined in this degree of detail. J. D. Coleman was with the 1st Cavalry through much of the period covered. He mixes vivid battle descriptions, interdiction operations and personalities with a broad look at the political pressures being exerted at the national and international levels during the same time period.

Extremely well written and easy to read, Coleman's book combines the right amount of detail to put the reader "on the scene" during tactical operations with an above–the–battle look at outside events. While *Incursion* does not claim to examine the strategic decision making, it does provide enough background for the reader to understand the events finally impacting directly on the soldier in the field. This view of frontline action and world–level politics is instructive, particularly for readers not familiar with this critical time period when US troops were withdrawing from Vietnam but the war was still strong and active.

In a straightforward and clear fashion, Coleman advises readers of his biases early on. It is easy to tell whom he admires (General Creighton Abrams, most 1st Cavalry commanders, all 1st Cavalry troops) and whom he does not (General William C. Westmoreland, II Field Force Commander Lieutenant General Julian J. Ewell, among others).

The book suffers only from the long period of time between the actions described and the date of publication. It would have been nice to see more pictures of the soldiers the author credits for "rising to the occasion" during critical battles and sketches of those fights. Nevertheless, this is a good book that is well illustrated, well written and sometimes riveting in its terse descriptions of courageous fighting. I highly recommend the work.

COL John B. Haseman, *US Army, American Embassy, Jakarta, Indonesia*

SILENT WARFARE: Understanding the World of Intelligence by Abram N. Shulsky. 222 pages. Brassey's (US), Inc., McLean, Virginia. 1991. $19.95.

The modern world of intelligence is complex and often baffling in its arcane language, application of technology and variety of activities. Only a rare light is shed on this shadowy world, usually through headlines dealing with an intelligence failure. So a book without spy novel thrills, sensational journalism or a disenchanted exposé is welcomed. Abram N. Shulsky's *Silent Warfare* is a serious, instructional introduction on the essential workings of intelligence in a democratic government. The author, in a broad, general approach, describes the scope and elements of intelligence; human and technical collection, analysis and production; covert action; and counterintelligence. Then, relying on his experience in intelligence and related national security matters, Shulsky discusses management and control, moral issues and a theory of intelligence.

Written in a clean, clear style, the author's topical discussions easily cut through the often difficult terminology and provide the general reader with a firm understanding of the subcultures in this silent world. His quick, three– to four–page description of each major collection discipline allows one to recognize the available sources of information. Shulsky has done the novice a service by not trying to attach the parts to existing agencies and thereby confusing the study's thoughtful presentation. He uses historical examples judiciously to illustrate a point but not to obscure the lesson. The book demonstrates its solid foundation in intelligence literature through its footnotes; however, a bibliography would have better served the interested student or general reader.

While experienced intelligence professionals will find the narrative too simplistic and problem areas—imagery intelligence, counterintelligence and the difference between covert and clandestine activi-

ties—handled weakly, the serious student and other professionals will benefit from the author's appreciation for intelligence analysis. He finds the analytic process the basis for intelligence failures since it "causes data to be ignored or misinterpreted," a shrewd observation for senior intelligence officers or decision makers who seek more collection systems as the panacea for intelligence shortcomings.

Shulsky offers an illuminating discussion of the difficulties that secrecy creates for the political superior and the uneasy relationship between expertise and policy making, balancing the dangers of the intelligence business with the necessary controls of political superiors. His explanation of how this relationship is more strained in a democratic process would serve as a useful guidebook to many who witnessed the recent Senate confirmation hearings for the new director of the Central Intelligence Agency.

Shulsky's book is the type that the intelligence professional would like to see in the hands of a democratic society to provide a better understanding of the problems and needs of an effective intelligence service. The professional will benefit from the lucid presentation of the tensions between intelligence experts and policy makers. This quiet, unpretentious primer will be a useful and valued introduction for students for a number of years.

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START AND THE FUTURE OF DETERRENCE by Michael J. Mazarr. 257 pages. St. Martin's Press, New York. 1991. $59.95.

START and the Future of Deterrence is an extremely valuable and relevant work, particularly within the context of recent events, to include Operation *Desert Storm*. Rather than being a dry, bean-counting, numbers-crunching exercise concerned with esoteric technicalities, Michael J. Mazarr's book is a lively discussion of various doctrinal issues whose overiding theme is that Strategic Arms Reduction Talks are the culmination of the US-Soviet strategic relationship.

The traditional concepts of deterrence based on Mutual Assured Destruction (MAD), with its implied asymetrical force structures developed for counterforce or countervalue missions, must be revised. The currently evolving relationship, if the current positive trends continue, will result in a system of reciprocal, cooperative deterrence ensuring enhanced crisis management options. Mazarr is realistic enough to state that nuclear weapons cannot be disinvented. Indeed, he postulates minimum force levels involving modernized systems (primarily mobile intercontinental ballistic missiles and command, control, communications and intelligence improvements) necessary for such a stable relationship.

Throughout the book, Mazarr stresses that major war as an instrument of statecraft is obsolete, including major *conventional* war. Although it becomes somewhat repetitive, it is a theme central to his thesis. Additionally, he provides superb summary overviews of various strategic issues to include the development of both US and Soviet nuclear targeting doctrine, strategic defense, modernization of strategic nuclear arsenals, arms control, extended deterrence, cruise missiles and nonnuclear strategic weapons (NNSWs).

This latest topic is most intriguing given the well-publicized performance of US "smart weapons" during *Desert Storm*. Although much of his discussion addresses the use of NNSWs as part of a US-Soviet confrontation, Mazarr also briefly discusses the implications of their use in Third World conflicts.

START and the Future of Deterrence should be read by any military professional wishing to readily understand the implications of nuclear weapons arms control, targeting doctrine and, most important, the evolving strategic relationship between the United States and the Soviet Union.

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MR Writing Contest Reminder

Entries for the 1992 *Military Review* writing contest will be accepted through 1 July 1992. This year's topic for entries is "The US Army in Joint, Combined and Coalition Warfare." The author of the winning manuscript will receive $500; the award for second place is $200; third place is $100. The winning manuscripts will be published in *Military Review* in the fall of 1992. Confine your essays to between 2,000 and 2,500 words and ensure they are original manuscripts not previously offered elsewhere for publication. Send your entry to Military Review, US Army Command and General Staff College, Funston Hall, Fort Leavenworth, KS 66027–6910.

BALKAN IMBROGLIO: Politics and Security in Southeastern Europe by Daniel N. Nelson. 136 pages. Westview Press, Boulder, CO. 1991. $24.95.

While the eyes of most Western observers have been turned toward the momentous events in the disintegrating Soviet Union, another area important to Western fortunes lies wracked with civil war and fracturing nations. News of unrest and civil war in the Balkans now occupies as much time on the evening news as events in the collapsing Soviet Union. This timely book provides an overview of the history and conflicts of the area, with emphasis on the events of the 20th century. The author is senior foreign policy adviser to Majority Leader Richard A. Gephardt (D–MO), US House of Representatives.

The area called the Balkans serves as a bridge between Europe and the Mediterranean and Asia. Its unfortunate image in the West is one of backward and alien peoples, fitting in with neither Europe nor Asia. Many Americans do not realize the long history of this part of the world or the role that the United States played in the creation of many of its current states. Few remember that World War I began with the assassination of Austrian Archduke Francis Ferdinand at Sarajevo in 1914. Between the world wars, the Balkan nations were caught up, often to their detriment, in the geopolitical maneuvers of the big powers. The influence of the Soviet Union in the region after World War II convinced many policy makers that the Balkans were best left to their own devices and on the back burner.

It is ironic that a main influence for stability in this region was the Soviet Union, which kept down any nationalistic or ethnic pressure. In Yugoslavia, this was done by Marshal Tito, who kept the various republics together. The de facto retreat of Soviet power from the region has allowed these simmering nationalistic and ethnic conflicts to boil over. With little or no democratic experience, many of these lands are struggling to find a better way to modernize their nations and reduce the iron hand ruling them. Romania and Bulgaria have overthrown their one–party systems, but fully functioning multiparty systems elude both countries. Recent events show the governments still resorting to the subtle or not so subtle use of force to cow opposition parties into a more submissive stance.

In addition to the "traditional" Balkan nations, the author discusses Greece and Turkey, whose fates seem intertwined. The Greek flirtation with socialism and its enmity with Turkey have diverted Greece from solving its problems. While Greece has been a staunch contributor to NATO, much of its activity has been directed toward its neighbor across the Aegean Sea. Turkish hostility toward Greece and recent problems with the Kurds have negatively affected its rapidly growing economy. In addition, Turks perceive that the United States will cease its aid to Turkey as the Soviet threat recedes.

The author has no instant solutions to the many problems affecting Southeastern Europe. What is essential is for the West to recognize the importance of the Balkans and adopt policies to bring these lands into the Western community. The rapidly growing populations of the Balkan nations and their economic problems cannot be ignored. Greater problems could result if the various countries fracture into smaller states with dramatically different economic strength and long memories of nationalistic hostilities.

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"I SHALL RETURN"

MacArthur's Flight to Australia

On 23 February 1942, President Franklin D. Roosevelt ordered General Douglas MacArthur to leave the Philippines to avoid being captured by the Japanese. Late in the evening of 11 March, MacArthur, with his family and a few staff officers, boarded four PT boats that would carry them to Del Monte Field on the Mindanao coast, 560 miles to the south. The tiny flotilla, under Lieutenant John Bulkeley, churned through high seas for 35 hours, mostly in darkness, several times in sight of enemy warships, but arrived on schedule in the early morning of 13 March. MacArthur noted later that the challenging voyage resembled a "trip in a cement mixer."

Shortly after midnight on 17 March, MacArthur and his party boarded two B-17s at Del Monte Field for the next leg of their journey, a 6-hour flight to Darwin, Australia. Lieutenant Frank Bostrom led his planes through 1,500 miles of largely Japanese-controlled air space and landed 40 miles inland at Batchelor Field at 0730, diverted at the last minute from Darwin, which was under air attack. MacArthur awarded Silver Stars to the weary B-17 crews, as he had earlier to Bulkeley's sailors.

The MacArthurs' odyssey was still not over, since they had yet to travel 2,000 miles, by C-47 aircraft and frontier rail, to Melbourne. At a brief train stop in Adelaide, MacArthur told reporters: "I came through, and I shall return"—words that were immediately flashed around the world.